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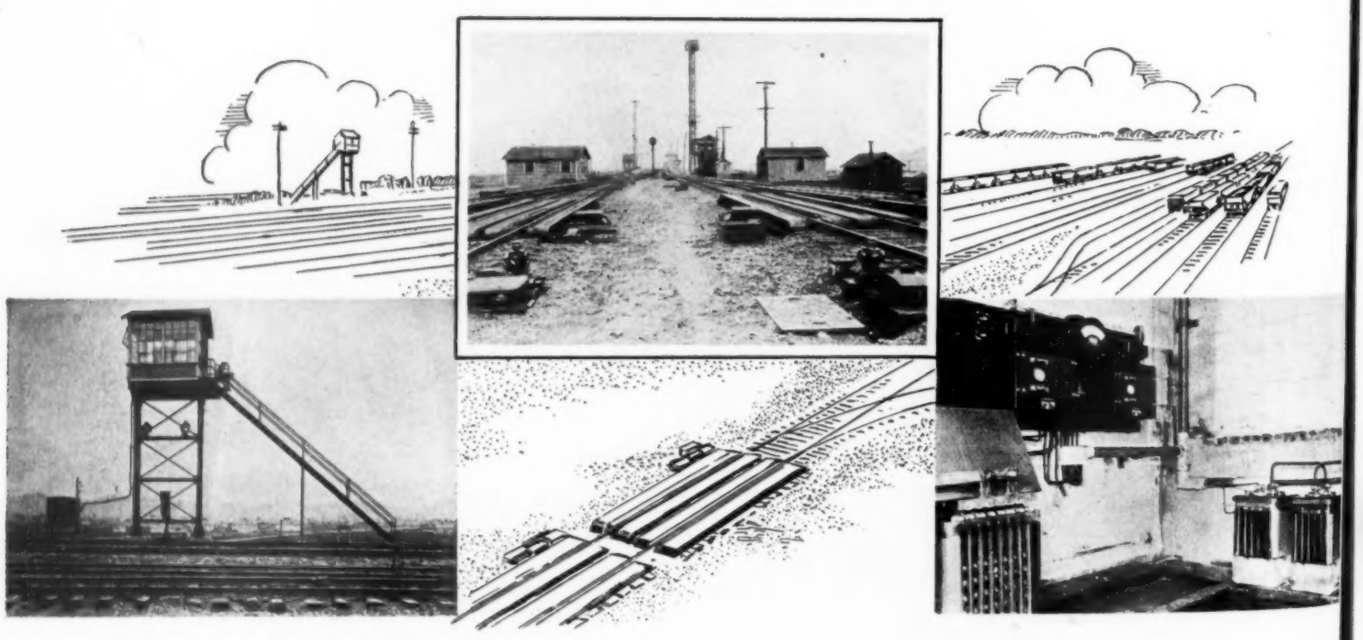
NOW! . . . .

Union Electro-Pneumatic Retarders are Proving their Worth Again

THERE are many cars of coal classified at Westbound Russell Yard on the C. & O. And to classify them promptly and efficiently required a large corps of riders. These riders, in turn, required many special facilities for their most efficient employment: a rider car, a track for the rider car, a motorman. Such items increased the cost of operating the yard and of maintaining it.

Now, at Russell, "Union" Model 28 Electro-Pneumatic Car Retarders are proving their worth again. Installed there, they are demonstrating the savings which are created by their use. Nine men are performing the labors of eighteen times that number. There is absolute certainty of operation: weather has no effect on the operation of "Union" Model 28 Electro-Pneumatic Car Retarders.

The "Union" Model 28 Electro-Pneumatic Car Retarder is the most powerful that has been constructed. This feature, which permits it to retard heavy cars moving at high speeds, combined with its strength and flexibility of operation make it an economic necessity for busy hump yards. Its maintenance cost, because of the strength of its construction and the engineering skill which has gone into its design, is low. It acts as a remote controlled air brake, and has the proved reliability of all Electro-Pneumatic apparatus.



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Railway Age

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Transportation on the Ohio River System

THERE is published elsewhere in this issue of the *Railway Age* a study of the comparative costs of transportation on the Ohio river system and the railways serving the same territory. The argument for the development of inland waterways—by which we mean improved rivers and canals—is based upon the assumption that it will result in "cheapening" transportation —that is, in enabling freight to be handled at a lower cost than by rail. If that assumption is unfounded, there is absolutely no case for the development of inland waterways.

The Ohio river system—including the Ohio and its tributaries—completion of the improvements in which recently was celebrated, is now more favorably situated to get a large traffic and handle it economically than any other part of the existing or projected inland waterway system of the United States. Claims of large savings in transportation costs made upon the Ohio system already repeatedly have been used as arguments for the development of inland waterways elsewhere. If a favorable showing of costs, present and prospective, cannot be made for the Ohio river system, it cannot be made for any of our existing or projected inland waterways. What, then, are the facts regarding the cost of transportation on the Ohio river system?

In a report entitled "Transportation in the Mississippi and Ohio Valleys" recently issued jointly by the Board of Engineers of the War Department and the Bureau of Operations of the United States Shipping Board, it was stated that "based upon a ton-mileage of 2,649,000,000 on the Ohio river system in 1926, the savings in transportation costs in that year amounted to about $25,000,000." When the total saving claimed is divided by the ton-mileage figure given it is found that the estimated saving per ton-mile was 9.44 mills. The average revenue per ton-mile in the same year of the eight principal railways serving the same territory was only 8.83 mills. In other words, it is claimed that those who shipped freight via the Ohio river system saved the equivalent of over 100 per cent of the average freight charges of the adjacent railways. The preposterousness of the claim is obvious. And yet it is upon just such preposterous claims that the entire argument for the development of inland waterways is based.

Costs of Transportation on the Ohio System

About 95 per cent of the traffic carried on the Ohio river system is handled for large corporations in boats owned by those who ship the freight or operated for them under contract. The Board of Engineers has secured from these large shippers "confidential" reports regarding the direct cost to them of water transportation. Just why the reports are "confidential", when they relate to operation on a waterway provided and maintained at the expense of the taxpayers of the United States, we do not pretend to know. In an "interim report" published in 1927 by the Board of Engineers a graph was given indicating that these "confidential" reports showed that in 1924 on the Monongahela river the costs borne by the shippers average 5.50 mills per ton-mile. Because of costs known to be incurred on waterways elsewhere the figure given appears reasonable.

The traffic on the Monongahela is several times denser, and all conditions are more favorable for economical transportation on it, than on any other part of the Ohio system. It may, therefore, be safely assumed that on the entire system the direct cost of transportation to the shipper averages at least 5.50 mills per ton-mile. On the Erie canal it averages about five mills. The comparable cost incurred by the government's barge line on the Mississippi river—including both operating expenses and interest on the investment in the barge line —is about the same.

So much for what inland water transportation costs the shipper, or consignee, or whoever actually pays the freight. There is an additional cost that is paid by the public in taxes for interest upon the investment in the waterway and its maintenance. Annual interest at four per cent on the investment that has been made in the Ohio river system amounts to $9,640,000, and annual costs of maintenance and other fixed charges to at least

$4,365,000, or a total of $14,005,000, or 5 mills for every ton carried one mile on the Ohio river system in 1928. The public is therefore bearing almost as much of the cost of transportation on the Ohio river system as those who pay the freight. The total cost is about 10.50 mills per ton-mile, as compared with an average revenue of 8.83 mills which is collected by the railways serving the same territory for handling all their freight business. This comparison, however, is unfair to the railways. About 90 per cent of the traffic handled by water is low grade freight, such as is handled by the railways at rates much lower than the average. The traffic of such coal-carrying lines as the Chesapeake & Ohio and the Norfolk & Western is more closely comparable with that handled by water, and in 1926 the average revenue per ton-mile of the Chesapeake & Ohio was only 6.02 mills, and of the Norfolk & Western 6.50 mills.

It may be said that the Ohio river, as now improved, can handle much more traffic, and that when it is used to its capacity total costs on it will be lower. There is no reason for anticipating that the direct cost borne by those who pay the freight charges ever will average less than 5.50 mills a ton-mile. If the traffic should increase 50 per cent, without any increase occurring in the total interest and maintenance costs borne by the public, the public would still pay 3.4 mills per ton-mile. The total cost by water would then be 8.9 mills, or still higher than the average revenue per ton per mile received by the railways serving the same territory for handling all their freight, and about 40 per cent higher than the average revenue per ton-mile received by the Chesapeake & Ohio and the Norfolk & Western, the character of the traffic of which is more nearly comparable to that of the waterways.

Cost of Water Transportation Elsewhere

It cannot reasonably be assumed that, including the taxes paid by the public, the total cost of transportation on the lower Mississippi is less than on the Ohio system. It would be far more unreasonable to assume that it ever can be made as low on the Missouri river, the upper Mississippi or the Lakes-to-the-Gulf deep waterway between Chicago and Cairo. The information available regarding the actual cost of transportation on inland waterways is grossly inadequate because the government departments and officials that should compile and furnish it to Congress and the public have completely failed in the performance of this duty, and instead usually have been content in the past to make wild claims and preposterous estimates. From such data as are available, however, the conclusion is inevitable that on practically every improved river and canal in this country the total cost of transportation is and must continue to be greater than that of transportation by rail.

Does not the Army Board of Engineers actually know this? In 1915 the engineer in charge of the Missouri river improvement recommended that further development of that project be abandoned on the ground that the expense would be disproportionate to any possible gains that might be realized. Professor H. G. Moulton submitted to the Board of Engineers an analysis which showed that if all the freight passing over the railroads between Kansas City and St. Louis were diverted to the water route the savings made in freight rates would not be sufficient to meet the annual maintenance and interest charges that would have to be borne by the government. The Board of Engineers, however, yielded to the pressure of the waterway interests, and it is now proposed to spend about $60,000,000 on the Missouri river. One army engineer who has been charged with the investigation of the upper Mississippi project has made two preliminary reports adverse to it; but nevertheless it is apparently intended to go ahead making a large expenditure upon the upper Mississippi. The Board of Engineers, which most persons assume is influenced in its attitude toward waterway development only by expert knowledge and a sense of public duty, seems to be influenced a great deal more by political pressure.

Undoubtedly inland waterways can be developed on which freight can be handled at lower rates than by rail, if the public will let itself be taxed enough for that purpose. But freight could be handled for nothing by either railway or waterway if the government would tax the public enough to raise and pay the necessary subsidies. The real economic question involved is not whether lower freight rates can be provided by subsidizing either water or rail transportation, but whether the subsidy paid at the cost of the taxpayers will be greater than the total saving made in freight rates. On the Ohio river system it is now costing the public a subsidy of at least 5 mills a ton-mile to save an average of not more than 3⅓ mills per ton-mile in freight charges, whereas, by giving the subsidy to the railways, it could have saved 5 mills per ton-mile in freight charges for each 5 mills of subsidy. In addition, there must be considered the fact that, in proportion to its cost, transportation by inland waterway is economically much less valuable than transportation by rail, because of the greater speed, dependability and convenience of rail service, and that in consequence if inland water service cannot be provided at a cost at least 20 per cent less than the cost of rail service it is not worth providing at all.

The only true tests of the economic justification of the development of inland waterways are (a) the comparable total costs of transportation by water and rail, and (b) the comparable services rendered. Nowhere in the United States, with the possible exception of the Monongahela river, is there an improved river or canal either now in existence or projected that can stand either of these tests.

Commission Versus Supreme Court

THE letter on railroad valuation written for the Interstate Commerce Commission by Commissioner Eastman to Chairman Couzens of the Senate Committee on Interstate Commerce, a summary of which is published elsewhere, makes it extremely difficult to hope for a settlement of the question of valuation excepting by practically interminable litigation.

For a third of a century the United States Supreme Court has held that a constitutional valuation of a railroad or public utility as a basis for the regulation of its rates must be an ascertainment of its present value, and must give weight to its present cost of reproduction. The LaFollette valuation law, in mentioning the cost of reproduction as a factor that must be considered, evidently sought merely to prescribe a method of valuation which would conform with the Supreme court's previously expressed views of what would be constitutional, and, therefore, not confiscatory. The Supreme court, in its decision in the O'Fallon case, held that the method of valuation favored by the commission was not in accordance with the LaFollette law because it did not give weight to cost of reproduction. The Commission, in Mr. Eastman's letter to Senator Couzens, now recommends that Congress pass legislation attempting to authorize and direct the commission to make a valuation in accordance with the method favored by it in the O'Fallon case. The Supreme court having held that the commission's theories of valuation do not agree with the LaFollette law, the commission now asks that the LaFollette law be so amended that it will agree with the commission's theories.

The Supreme court, in its opinion in the O'Fallon case, cited decisions previously rendered by it as precedents for its decision in that case. The natural inference is that the court regarded the method of valuation favored by the commission as not only not in accordance with the provisions of the LaFollette law, but also as not in accordance with its previous interpretations of the provisions of the federal constitution regarding confiscation of property. It would appear, therefore, that Congress has no more constitutional power to authorize and direct the commission to make a valuation in the way the commission favors, than the commission has to make it in that way without any such attempted authorization and direction by Congress. If Congress should pass such legislation as Commissioner Eastman suggests, undoubtedly the railways, at the first opportunity, would attack its constitutionality in the courts. Unless the Supreme court should reverse all the decisions it has made for more than 30 years, it would hold the legislation unconstitutional. During the years the litigation was pending no progress whatever would be made in finishing those valuations which already have been under way about sixteen years.

Commissioner Eastman's letter raises a direct issue between the commission and the Supreme court. It is an appeal to Congress for help in the commission's effort to influence the Supreme court to authorize valuations to be made in a way that the Supreme court heretofore has held would be unconstitutional. That the commission finally will succeed in its persistent efforts to establish a basis for the regulation of railway rates which, measured by the standards heretofore adopted, would be confiscatory, seems highly improbable. The position taken and so stubbornly maintained by a majority of its members is, however, highly significant. A government body that shows such unwillingness to apply to an industry which it regulates the law as heretofore held applicable to that industry can hardly be regarded as a fair and impartial tribunal.

It Has to Be Done Right

GENERAL progress in the adoption of better methods and in the use of improved materials can usually be measured by available statistics, for example, those covering the consumption of treated crossties. On the other hand, it is not so readily possible to gage the advance in the more exacting refinements of practice, such as the rigid adherence to specifications in the purchase of ties. There is, however, somewhat of an exception to this rule in the practice of adzing and boring ties, thanks to the statistics compiled by the United States Forest Service in co-operation with the American Wood Preservers' Association. Ten years ago the number of ties subjected to adzing and boring was so small as to be unworthy of statistical record, but by 1923 the number of ties that were either adzed or bored, or both adzed and bored, totaled 5,924,113, or 11.2 per cent of all treated ties purchased by the railroads, while in 1928, the last year for which statistics are available, this number had increased to 40,375,414 or 58.5 per cent of all treated ties purchased.

On its face, this is a commendable record of progress, but even here there is evidence that refinement in practice cannot be measured entirely by statistics. Thus, at the last convention of the Roadmasters' Association discussion of the subject of crossties brought out the fact that, in some cases at least, the preboring of ties was not being done with the degree of accuracy necessary to permit of the spikes being driven into them. Various explanations may be offered for this, but undoubtedly the underlying cause is a defect in organization. Failure to realize that refinements in practice call for a recasting of organization often has been a stumbling block in the application of scientific methods in railway work. In the days when a tie was just a tie, rough-and-ready methods sufficed. Now, when a tie is a structural member designed to

last at least 20 years, better records, more careful inspection and thoroughgoing supervision are as necessary as adequacy of the preservative treatment.

Is Further Stock Sale To Employees Timely?

THE advantages of the ownership of railway stock by railway employees have been frequently discussed in these columns. The increase of such ownership in the past few years has been steady. Nevertheless, the progress made so far is but an humble beginning to what might become a major economic phenomenon.

One of the principal points of attack against corporate control of industry is its so-called "absentee ownership"—i.e., ownership by stockholders who know nothing about the property, have no share in its management and are interested in it solely to the extent of its dividends and its possibilities for speculative gain. We believe that this weakness is absent or inoperative in the case of most railroads. Nevertheless in it lies a potential danger, since at the very least it is a weapon in the hands of critics. The steady enlargement of the share of ownership in a corporation by those intimately connected with its work gives added assurance of continued responsibility of management, a reputation necessary to confidence, credit and public esteem. It brings a closer rapprochement between wage earners, management and financial interests, reducing the likelihood of mutually-destructive industrial conflict. From the standpoint of the consumer, the development promises better service—since employees' interest in their work is increased—and reasonable charges, since a harmonious organization works more efficiently.

The employee benefits by the acquisition of a voice in the management. This voice may be small at the beginning, but as the development progresses the vote of employee-stockholders may one day become an important factor in the control of industry. Closer connection with the direction of corporate affairs will likewise assure without coercion a full consideration of employees' interests in the determination of company policies. To the extent also that this development may foster industrial efficiency, the wage earner as well as the stockholder may expect to benefit.

We can think of but two major obstacles which may arise in furthering stock purchase by employees. One is that the company may be in such a financial condition that purchase of its securities is not a reasonably safe investment. In such a case wage earners should not, of course, be invited to assume the risk, which should be left to moneyed speculators who can afford to take the chance. Another obstacle may arise in the price of stocks. No stock is a good investment for a man in moderate circumstances which does not offer reasonably good security combined with a fair rate of return on the price paid. Market prices of stocks a few months ago were high out of all reason and the yield on the investment was correspondingly low. Such was not a favorable time for the sale of stock to employees unless, as actually occurred in a few outstanding cases, it was possible to make the sale at a price considerably below the market.

It is not always possible or advisable, however, for a railroad to sell its stock to a favored class at prices lower than those quoted on the Stock Exchange. For such companies the only favorable time for stock sales to employees is during a period of low market prices. Prevailing market conditions indicate that we are now experiencing such a period. Railroads disposed to assist their employees in acquiring stock, but which cannot arrange for such sale independent of Stock Market prices, may find, therefore, that conditions now prevalent in the market may permit them to act.

The Cost of Railway Buying

AN officer on one of the large railways has developed some interesting figures on the cost of operating a purchasing department. He calculates that it costs 9.7 cents on the average to type every purchase order, 8.6 cents to prepare a requisition, 9.4 cents for each letter written, 3.8 cents to transfer the prices from an invoice to the price cards, 3.8 cents to price each order, 8.9 cents to check each invoice, and 6.6 cents to record the invoice in the permanent record. This is only the direct expense ascertained by considering the clerical time for each class of work. When all expenses of the purchasing office are considered, the same officer calculates that the cost is 86 cents per order placed.

No one will argue that the purchasing activities of a railroad should be measured on the basis of the cost of the department per order placed, or that any figure could be developed for the unit cost of preparing orders which could be applied indiscriminately. It is conceivable, for example, that a department whose unit cost of doing work was high could very easily reduce it by increasing the number of units of work done or by reducing the wages of clerical forces when this would be quite contrary to the most economical procedure. The calculations of our statistically inclined correspondent are however, illuminating and significant. He has shown that in a purchasing office which is conducted economically, the preparation of orders is a work by no means free from expense, even when the clerical work of the purchasing office alone is considered separately from the additional work done in stores offices, accounting offices, freight offices, etc. The figures bring out forcefully that the cost of buying is not alone the price at which articles are bought, and at a time like this when the urge to trade traffic for purchases, to patronize only the neighborhood supplier and contractor, and a lot of other urges, have a very decided tendency to enlarge these costs, it would be well if a complete picture of buying were more often painted.

Transportation on the Ohio River System

Total costs, including taxes paid by public, are greater than average charges of railways, and will continue to be when improved Ohio river is used to capacity

LATE in October there were held at Pittsburgh, Cincinnati, Louisville, and other cities on the Ohio river, celebrations of the completion of the canalization of the Ohio, affording a year-round depth of nine feet for the length of the river from Pittsburgh to Cairo, 981 miles. At these celebrations enthusiastic speeches were made, treating the occasion as indication of the revival on a large scale of river navigation from Pittsburgh to New Orleans. The chief address was that of President Hoover at Louisville on October 23, when he not only hailed the "day of renaissance" of river navigation, but took occasion to outline the general policy of his administration to continue the "modernizing of every part of our waterways which will show economic justification in aid of our farmers and industries," including the entire Mississippi system, the intercoastal canals, the improvement of the channels of the Great Lakes and possibly the St. Lawrence waterway, by the expenditure of from $95,000,000 to $115,000,000 a year for the next few years.

From this presumably completed Ohio waterway, the first in the chain of proposed improvements, what lessons may be drawn to guide our future national waterway policy? So favorably situated with respect to present and future traffic—"draining the most highly developed industrial district in the United States, if not in the entire world," according to the War Department—does the Ohio river system furnish "economic justification" for further waterway development? Has it aided in reducing total transporation costs? Or has it merely reduced water transportation charges for favorably located shippers by increasing the burdens of the taxpayers?

What is "Cheapening" Transportation?

Before an analysis is made of the Ohio system, it will be worth while, in the light of the proposed large expenditures for further development of waterways, to consider some of the questions raised by the claims made in behalf of the improvement of rivers and construction of canals. The most important of these claims is that transportation will be "cheapened."

What is meant by cheapening transportation? Do the advocates of waterway development mean that waterway charges alone will be lower than the corresponding rail rates, or do they mean that total waterway costs, including the hidden burden of capital charges maintenance and operating expense borne by the taxpapers, will be less than the railway rates? Similarly, by which of the foregoing bases is "economic justification" to be determined? These questions, so far, remain officially unanswered.

In a so-called "Interim Report" issued in a limited edition in 1927 by the Board of Engineers for Rivers and Harbors and the Shipping Board, "to render immediately available to Congress and the public in summarized form data showing the importance to the country of the improvements completed and in progress in the Ohio valley" the following statement is made: "The primary measure of the economic value of any waterway system is the savings in transportation costs which it affords. Usually this saving is shown by comparing the water transportation costs with the rates for moving the same goods between the same points by rail. Included in this cost of water transportation should be the charges for interest on capital investment in waterway improvements plus annual cost of operation and maintenance."

Yet Major General T. Q. Ashburn, chairman and executive of the government's Inland Waterways Corporation operating on the Mississippi river system, says that "propaganda to the effect that the cost of the commercial avenues thus created at public expense, in the hope that all the people who have been taxed to create them might have cheaper transportation, should be charged against the operators upon such systems, is so ridiculous as to carry no weight with thinking people." A half-way concession also appears in the Interim Report which holds that certain waterway expenditures have already paid for themselves, while the Transportation Division of the U. S. Department of Commerce in a report entitled "Inland Water Transportation in the United States" advances a theory subscribed to by many that much of the past expenditures for river improvements should simply be charged off and forgotten, and that "for services on channels already made navigable or on canals already built the returns need cover only current operating expenses and necessary maintenance of channel, terminals and floating equipment in order to justify continuance."

The United States Department of Commerce has been carrying on, for a number of years, an intensive campaign to reduce and eliminate waste in industry. Yet where throughout the nation is there greater opportunity for economic waste than in the expenditure under political pressure of hundreds of millions of dollars in duplicating existing transportation facilities, unless and until it can be shown clearly that these expenditures will mean not merely lower water rates to certain favorably situated shippers, but a reduction in the aggregate transportation bill of the entire nation?

President Hoover has referred to previous waterway development as a "patchwork of disconnected local improvements and intermediate segments" which "has in past years been the sink of hundreds of millions of public money." While the new work seems better planned than formerly, what evidence has been advanced that the proposed expenditures, if made, will not fall under the same characterization ten years from now?

The fact that so many optimistic predictions of a

new era of river transportation were made at the celebrations on the Ohio, and that the volume of traffic already developed on that waterway is so frequently cited by waterway advocates as an argument for continued expenditures, makes it interesting to go into some analysis of what has been accomplished on this waterway, and what return, if any, the American people have received so far, and are receiving now, on their large investment.

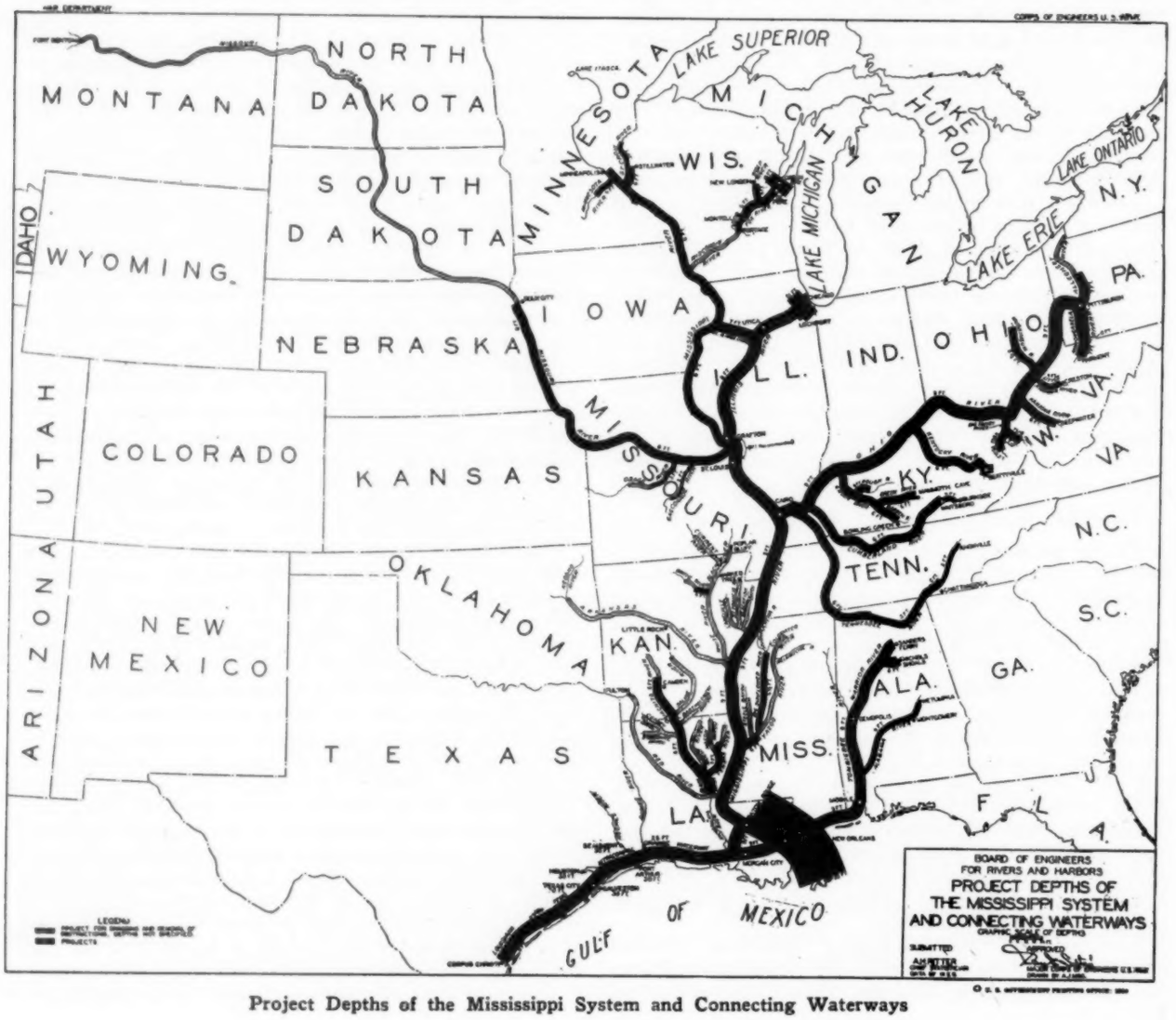
Traffic on Ohio River System

The Ohio river is formed by the confluence of the Allegheny and Monongahela rivers at Pittsburgh and empties into the Mississippi at Cairo, Ill. Its width varies from about 1200 feet to about 4000 feet near the mouth, and there is a fall of 425 feet. The Allegheny river rises in northern Pennsylvania, flows northwestward into New York and thence southward to Pittsburgh, a distance of 325 miles. The Monongahela is formed by the junction of two smaller streams near Fairmont, W. Va., and flows in a northerly direction 128 miles to Pittsburgh. These three rivers, the Ohio, Allegheny and Monongahela, together with the more important tributaries of the Ohio, form what is known as the Ohio river system. These tributaries include the following rivers: Muskingum, Little Kanawha, Big Sandy River and Levisa and Tug Forks, Kentucky, Green and Barren, Rough, Wabash, Cumberland and Tennessee.

Serving, as it does, "the most highly developed industrial district in the United States," the Ohio river system is naturally encompassed by a network of rail lines. Included in this network, among other lines, are the Baltimore & Ohio, Pennsylvania, Chesapeake & Ohio, Norfolk & Western, Louisville & Nashville, and Illinois Central, in addition to various lines in the Pittsburgh district, such as the Pittsburgh & Lake Erie and the Monongahela.

The gross traffic on the Ohio river system has shown an increase from a little more than 13,000,000 tons in 1890 to 27,000,000 in 1917 and 58,573,535 tons in 1928, an increase of more than 100 per cent since 1917. Eliminating traffic duplications, the net tonnage of the Ohio river system in 1928 was 46,034,000, as compared with 44,450,704 tons in 1927 and 45,226,984 tons in 1926.

During the progress of canalization the traffic of the Ohio river proper has been growing at a rapid rate, particularly as compared with the low point of 1917. From 1890 to 1905 this tonnage increased from 6,720,000 to 12,972,711. It then declined to 7,955,539 tons in 1909, only to increase to 11,771,892 tons in 1911.



Project Depths of the Mississippi System and Connecting Waterways

Then followed another steady decline to 4,598,875 tons in 1917. From this low point the climb to 20,938,267 tons in 1928 represented a tonnage increase of about 350 per cent. Up to now, more than 95 per cent of the traffic on the Ohio has been handled by private and contract carriers. That is, this tonnage is either carried in barges belonging to the owner of the freight or is handled by an operator who contracts to furnish service to one or more shippers. There is but little common-carrier service, and in the Denison Act of 1928 the Ohio was specifically excepted from the tributaries of the Mississippi to which extension of the operation of the government's barge line was authorized.

Tonnage on the Ohio river alone in 1928 showed an increase of four per cent over 1927, while ton-mileage increased 10.7 per cent, due to an increase in the average haul from 60.5 miles to 64.3 miles. Omitting sand and gravel traffic, which declined, tonnage showed an increase of 11.4 per cent, this gain occurring principally in the movement of iron and steel, oil, gasoline and coal. Tonnage distribution in 1928 was as follows:

Coal	43.8%
Sand and gravel	41.8
Iron and steel	6.75
Stone	2
Logs and lumber	1.9
Oil and gasoline	1.6
Packet freight	1.6

While the tonnage handled in the Pittsburgh district in 1928 exceeded 9,000,000 there was a very rapid thinning out below Pittsburgh. Within 70 miles tonnage dropped to about 3,000,000 and for the next 190 miles, to Point Pleasant, W. Va., it was only about 600,000. Between that point and Cincinnati, another 210 miles, coal tonnage caused an increase to about 3,000,000 after which the tonnage dropped to 500,000 or 600,000, except for increases in the vicinity of Louisville, where it rose to nearly 2,000,000, and near Evansville, to 1,000,000. From Caseyville to Paducah, 70 miles, traffic was about 750,000 tons, while sand and gravel caused a rise to about 1,350,000 in the vicinity of Paducah. There was then a drop to about 560,000 to Cairo.

The Monongahela carries a much heavier traffic than does the Ohio itself, the tonnage in 1928 totalling 27,412,143. The traffic density on the Monongahela shows an even greater excess over the Ohio, ton-miles per mile of river averaging 1,370,730 in 1928 on the Ohio and 8,661,000 on the Monongahela. This high traffic density reflects the fact that the Monongahela has a unique location in this country, with mines and manufacturing plants lining its shores for an almost continuous stretch of nearly 80 miles from its mouth.

Practically all of the traffic on the Monongahela is carried by private or contract carriers, and is limited to the stretch of river between Morgantown, W. Va., and Pittsburgh, a distance of 101 miles. Tonnage distribution in 1928 was as follows:

Coal	80.4%
Coke	4.7
Gravel	2.8
Sand	3.9
Iron and steel	6.5
Miscellaneous	1.7

What Improvements Have Cost Taxpayers

We have, then, this Ohio river system of waterways, handling in 1928 a net total of 46,000,000 tons of freight, of which some 90 per cent represented coal, coke, sand, gravel, iron and steel—all low grade, heavy loading commodities. What has the public paid to provide this transportation artery, with a highly specialized traffic more than 95 per cent of which is handled by private or contract carriers? What has this "plant facility" cost the taxpayers?

The cost of the Ohio river improvement is generally given as $118,000,000, the amount of the appropriations for the lock and dam project and for the earlier work. This does not, however, include the expenditures on the tributaries whose traffic goes to swell that of the Ohio, and whose tonnage is included in the system figures, nor does it include the $13,011,252 expended for "open channel" work on the Ohio itself.

The total expenditures for improvement work on the Ohio system to June 30, 1929, amounted to $176,000,000, excluding certain sections of the Tennessee river for which the reported figures include amounts for power development. The cumulative cost of operation and care of locks has amounted to $65,000,000 more, making a total of $241,000,000 expended by the taxpayers to reduce the cost of transportation for the users of the waterway. While the completion of improvements on the Ohio has already been celebrated, the shadow of further expense is cast by the recent testimony of Col. E. L. Daley before a subcommittee of the appropriations committee of the House of Representatives, that "Work is still being done on the Ohio. That river never will be completed."

For the Ohio river alone the expenditure has been $127,966,646 for improvement and $22,421,783 for operation and care, while for the Monongahela alone there has been spent $13,189,846 for improvement and $16,443,691 for operation and care. For a dozen or so lesser subsidiaries the expenditures for new work exceed $35,000,000, and for operation and care $27,000,000. The investment in the improvement of the Ohio proper has been about $130,000 a mile, as compared with the average investment in the railways of the United States of about $100,000 a mile. The investment on the Monongahela is about the same as that of the railways per mile. It should be noted, however, that the railroad investment includes stations, terminal facilities, signals, both passenger and freight locomotives and cars, etc.

As regards the customary optimism with which waterway advocates view the cost of proposed development, it is interesting to note that the Windom Select Committee on Transportation Routes to the Seaboard, appointed by the Senate in 1874, recommended a plan for improvement of the Ohio from Cairo to Pittsburgh at an estimated cost of $22,000,000. While the existing improvements are more complete than those envisioned by the Windom Committee, which had in mind a channel depth of 6 to 7 feet, the actual cost has been about six times as great as their estimate.

Savings Claimed for Water Transportation

We have, then, an investment of approximately a quarter of a billion dollars of the public's money in the Ohio system. What is the "economic justification" for this investment? What are the benefits, and, if any, who receives them?

Answers are not lacking to these questions, but when these answers are analyzed the questions remain unanswered. For example, in a report entitled "Transportation in the Mississippi and Ohio Valleys" prepared jointly by the War Department Board of Engineers for Rivers and Harbors and the Bureau of Operations of the U. S. Shipping Board, issued in September, 1929, it is stated that "a study of rates and terminal expense as outlined in the Interim Report on the Ohio river system shows that the savings

in transportation costs amounted to $20,544,000" for the traffic of 1925, when the ton-miles were 1,978,000,000. "Deducting the fixed charges, including interest on the cost of the improvements, operation, care and maintenance charges, the net saving is found to be $11,387,000. On the same basis the present net savings are about $15,000,000. Based upon a ton-mileage of 2,649,000,000 on the Ohio river system in 1926, the savings in transportation costs in that year amounted to about $25,000,000."

The foregoing gross figures, when reduced to a traffic unit basis, equal a saving of 1,039 cents per ton-mile in 1925 and a saving of 0.944 cents a ton-mile in 1926. Disregarding for the moment the fact that the ton-mile basis of comparison is peculiarly favorable to the waterway, as will be shown later, it may be pointed out that the average ton-mile revenue of all the Class I railways in the United States—including high-grade and L. C. L. freight as well as low-grade, and covering many railways whose basic rates are on a much higher level than those prevailing in the Ohio Valley—amounted to only 1.097 cents in 1925 and 1.081 cents in 1926. For those roads operating in the territory served by the Ohio river system, average ton-mile revenue was as follows:

	1925	1926
Baltimore & Ohio	0.995c	0.993c
Chesapeake & Ohio	0.620	0.602
Illinois Central	0.881	0.867
Louisville & Nashville	0.889	0.877
Monongahela	1.055	1.040
Nortolk & Western	0.682	0.650
Pennsylvania	1.037	1.017
Pittsburgh & Lake Erie	1.238	1.195
Weighted average	0.905c	0.883c

The foregoing weighted averages cover, of course, all classes of traffic, and are thus increased by the inclusion of much high-grade traffic such as the waterway does not handle. On the other hand, as has been shown, average waterway hauls on the Ohio system are relatively short and on corresponding rail hauls average ton-mile revenue would probably be increased by the relatively large part of terminal expense it would have to bear. These two factors, of course, cannot be evaluated statistically. But when claims are made that the Ohio system saved to the public (or the shippers) 1.039 cents per ton-mile in 1925 and 0.944 cents per ton-mile in 1926, although the weighted average ton-mile revenue of the adjacent railways was but 0.905 cents in 1925 and 0.883 cents in 1926, one might almost ask the question as to whether the river not only handles traffic for nothing, but in addition, pays a ton-mile bonus. Claimed waterway "savings," when unaccompanied by definite data as to their compilation, do not furnish satisfactory "economic justification."

In the Interim Report previously mentioned, somewhat more detailed information was included regarding these claimed savings. For example, on coal from the Monongahela to the upper Ohio, moving 50 miles on the Monongahela and 38 miles on the Ohio, the average rail rate was stated as $1.34 a ton compared with a water transportation cost of 30 cents a ton plus a terminal differential of 10 cents a ton. Applied to the 3,729,997 tons of coal moving between the points the saving of 94 cents a ton was placed at $1,738,700 on the Ohio and $1,914,300 on the Monongahela. The comparison, of course, is made with an unusually short rail haul on which the rate per mile is much greater than that for a haul for anything like the length of the Ohio river.

Total Costs by Water and Rail

But of much greater importance is the fact that the foregoing comparison and all similar comparisons ignore the fundamental that the water rate alone is not the total cost of water transportation. The fact cannot be stressed too strongly that the total cost of water transportation on improved rivers and canals includes not only the actual and visible charges for conveyance paid by the shippers, but the no less actual, though hidden, charges for interest on invested capital, for maintenance and for operation paid by the taxpayers. On one waterway, for example, the actual charge for waterway conveyance amounts to only from one-fifth to one-eighth of the total cost of this water transportation.

Railway rates and railway average revenue per ton-mile, on the other hand, are all-inclusive. These charges are the total cost of rail transportation: There is no Santa Claus in the background, no taxpayer upon whom is thrown, as in the case of the waterways, concealed transportation charges. Railway rates cover the cost of maintaining railway right-of-way and structures; of maintaining equipment; of securing traffic; of conducting actual transportation operations; of general overhead; of taxes on the entire railway property; and of a capital return on this entire property. Waterway charges are conveyance charges plus charges on equipment alone for maintenance, taxation and capital return. They include no charges for the maintenance and operation of their right-of-way, no taxes on this right-of-way and no capital charges upon it. "Economic justification" cannot be determined by a comparison of waterway conveyance charges alone with total rail charges.

Certain figures in the Interim Report provide, however, a somewhat more equable basis of comparison. Inasmuch as almost all of the present traffic on the Ohio river system is carried by private or contract carriers, it is not moved on published rates. However, it was stated in this report that "water transportation costs on the Monongahela are quite definitely known for the past five years from data received from operating companies." While these data were treated as confidential by the War Department, a graph showed the waterway conveyance cost to have been 0.550 cent per ton-mile in 1924. This figure seems reasonable in the light of corresponding costs on other waterways. While, because of the favorable traffic situation of the Monongahela, this figure may be and probably is somewhat of an understatement for the entire Ohio system, it may be accepted for the system in the lack of more definite data. With this average as a basis for the direct costs of water transportation on the Ohio river system, the indirect costs to the taxpayer may be calculated from official information.

The Interim Report points out some of the difficulties involved in attempts to compare water charges with rail rates, but states that it has been possible to prepare "with a sufficient degree of accuracy" the following table showing the "economic value" of the Ohio river system as of 1925:

Cost of improvement to June 30, 1925	$119,804,262
Tonnage, 1925	48,081,729
Ton-miles	1,977,896,119
Fixed charges, fiscal year 1925	$9,157,274
Gross savings in transportation costs	$20,544,394
Net savings	$11,387,120

The "fixed charges," which averaged 0.460 cents per ton-mile, are said to have been arrived at by including the annual charges for maintenance, operation and depreciation plus 4 per cent on the cost of the improvement. Four per cent interest on $119,804,262 is $4,792,170, so that $4,365,104 is left for maintenance and other annual charges. The cost of the improvement has since increased so that the total for the Ohio river

alone now exceeds that given for the Ohio system in 1925, and the annual interest cost has therefore increased since then, but exact figures for the other charges are not available.

The total investment in the system is now $176,000,000, on which interest at 4 per cent amounts to $7,040,000 a year. Using only the same other fixed charges as before ($4,365,104), the total annual charge would be $11,405,000, or 0.410 cents per ton-mile for 1928.

Counting all the expenditures on the Ohio system for which the government has received no return, interest at 4 per cent would be $9,640,000: adding to this the same $4,365,000 for maintenance and other fixed charges, the total annual cost of the Ohio system, not paid by the users thereof, would be $14,005,000, or 0.500 cents per ton-mile for all the system traffic.

So much for the hidden costs. Now, if we add to these hidden costs of 0.500 cents per ton-mile the actual conveyance charges, as shown in the Interim Report, of 0.550 cents per ton-mile, it appears that the total cost of transportation on the Ohio river system is 1.050 cents per ton-mile. As previously shown, the weighted average revenue per ton-mile of the railways adjacent to the river system amounted to 0.883 cents in 1926.

Not only is the total average ton-mile cost of transportation on the Ohio river system seen to be greater than the corresponding average revenue of the adjoining railways (despite the much greater proportion of high-grade freight which these railways carry), but there is also another factor which tends to further increase these waterway costs on actual traffic movement. The fact was previously mentioned that ton-mile comparisons are influenced by a factor which beclouds the issue somewhat on the side of the waterway. This factor is the relative circuity of rail and of water routes.

Between points any considerable distance apart, rail routes are almost invariably much shorter than corresponding river routes. The Illinois Central, for example, runs from St. Louis to New Orleans in 709 miles, as compared with 1142 miles via the Mississippi river. From Pittsburgh to Cairo, Ill., the distance via the Ohio river is 981 miles; the short-line railroad mileage is 650 miles.

This fact has the effect of inflating the river traffic, when stated in terms of ton-miles, and consequently of reducing the costs borne by each ton-mile. Suppose traffic moves on a rate of $1 per ton between two points 100 miles apart by rail and 150 miles apart by river. There is obviously no total cost saving in shipping by river. The total transportation charge on a ton of freight is the same, whether it moves by river or by rail. But on a ton-mile basis, the average railway charge is one cent per ton-mile in this case while the average river charge per ton-mile is but 0.667 cents. Due to this fact the foregoing ton-mile comparisons are warped on the side of the waterway; river traffic is inflated; river costs per ton-mile are whittled down by the circuity of the river route; and if the river and the rail mileages were the same, the total water costs per ton-mile, even now greater than the average ton-mile revenue of the adjacent railways, would be still further increased.

So the search for "economic justification" must go on There is no justification here, nothing to controvert the railway claim that when total costs are considered they can haul freight cheaper than any improved or artificial waterway in existence.

But, it may be objected, give the river a chance! The Ohio improvements have not yet been long enough completed to afford a basis for just indictment. Traffic is bound to increase, new and improved equipment will be provided, and costs will be lowered.

Traffic on the Ohio may and probably will increase. New equipment may and probably will be provided. But the trend of costs cannot be foretold so easily. More money will be spent on the river and on terminals and on this new equipment, and capital charges will be increased. Increased traffic may bring higher costs through the addition of higher grade freight moving in smaller shipments. Common-carrier service will mean traffic solicitation and its accompanying expense. Such service will have to be on a money-making and not on a plant facility basis. And even if water costs are lowered, will the railways stand still in this regard? Their record of the last ten years is ample proof to the contrary.

But passing the question of future conveyance charges as too difficult for present determination, what of the hidden costs? The Monongahela is now handling 27,000,000 tons of freight annually, while tonnage on the Ohio proper is 21,000,000. The capacity of the Monongahela is estimated in the Interim Report at 30,000,000 tons a year, while it was estimated that the Ohio river proper would be able to handle 30,000,000 tons of commerce per year through each of its locks upon completion of the project. Tonnage increases may naturally be expected to occur principally at the points where the present traffic is heaviest, which means probable further expenditures to handle this increased traffic. Average hauls and ton-mileage may increase, however, so let us assume a ton-mileage gain of 50 per cent for the entire Ohio system. Additional capital expenditures will be necessary, of course, but on the basis of the investment already made there would still be hidden costs, even on this greatly increased traffic, amounting to 0.340 cents per ton-mile that will be paid from taxes. Assuming the conveyance costs to remain at 0.550 cents per ton-mile, here would be a total cost of 0.890 cents per ton-mile—not yet challenging the railroads and not yet providing "economic justification" on the basis of comparative total costs.

Why Shippers Use Waterways

This study of comparative costs of transportation by the improved Ohio river system and by rail throws light on several questions that are raised by the movement for the development of inland waterways. It would naturally be assumed that those shippers who have used the Ohio river system in preference to the railways have done so because the costs of transportation by water that they have to pay are less than the rates by rail. The available statistics indicate that this is the case—that, in fact, these shippers are paying on the average for transportation by water only about one-half cent per ton-mile or even less in some instances on the Monongahela, while for transportation of the same commodities by rail they would have to pay considerably more.

This indicates the reason why it is so often claimed that the cost of transportation by inland waterways is or can be made less than by rail. The economic consideration which is so vitally important from the standpoint of the taxpaying public, and which is constantly ignored, is that for providing transportation by inland waterways there are incurred additional costs which are paid by the public and which, when added to the

costs borne by the shippers, make the total cost of transportation by water as great or greater than cost of transportation by rail.

Another point of the first importance which should not be disregarded in the discussion of waterway development is that rail service is faster, more dependable and better in other respects than transportation service by inland waterways, and that, therefore, to put the waterway service on an economic parity with the rail service the total cost of transportation by water must be enough less than the cost by rail to offset the difference in the character and value of the transportation service rendered. It has often been assumed that rail service is at least 25 per cent more valuable than inland water service, and that, therefore, the costs by water must be at least 20 per cent less than by rail to offset the difference in the value of the service.

The available facts regading the Ohio river system indicate that total costs of transportation on it are actually greater than by rail, and therefore it affords a transportation service that is inferior to that of the railways, while the provision of it makes necessary the incurring of costs greater than those that would be incurred by rail. Hence, in trying to establish the economic justification of development of inland waterways by citing evidence afforded by the Ohio river system, the advocate of waterway development labors under the double disadvantage of trying to explain and defend expenditures of public money which result in the provision of a service which will not stand economic comparison with railway service in point of either quality or total cost.

Investigation of Railway Ownership Authorized

WASHINGTON, D. C.

THE proposed investigation as to "who own the railroads" by the House committee on interstate and foreign commerce, with particular reference to ownership of railroad interests by holding companies, investment trusts, etc., and as to the ownership of the holding companies and others, was authorized by the House on January 24. By a viva voce vote the House adopted House Resolution 114, originally introduced by Chairman Parker of the committee, but reported by the rules committee in order to expedite action, and immediately thereafter Mr. Parker introduced another resolution authorizing the expenditure of $25,000 for the expenses of the investigation, including the employment of experts and counsel.

The inquiry, "for the purpose of obtaining information necessary as a basis for legislation"—meaning consolidation legislation or possibly some way of bringing holding companies within the regulatory jurisdiction of the Interstate Commerce Commission—is to include the ownership and control, direct or indirect, of stock, securities or capital interests in any common carrier engaged in the transportation of persons or property in interstate commerce, by holding companies, investment trusts, individuals, partnerships, corporations, associations and trusts, and the organization, financing, development, management, operation, and control of such holding companies, etc., with a view to determining the effect of such ownership and control. To the extent necessary to determine the effect, the committee is also authorized to make like investigation of the carriers. The results of the investigation, including such recommendations for legislation as it deems advisable, are to be reported to the House.

It is stated that much of the investigation will be covered by the work of the experts, and with the assistance of the Interstate Commerce Commission, before hearings are held before the committee. As a helpful starter Representative Wyant has placed in the Congressional Record a list of some 75 investment trusts, most of which, he understands, own some railroad securities, but what the committee is particularly anxious to find out is how many other big holding companies there may be like the Alleghany Corporation and the Pennroad Corporation or the Pennsylvania Company which hold the control of strategic railroads. One idea is that the commission, for example, might not be misled into allowing the Wabash to effect a consolidation or control of a "fifth system" controlled by the Pennsylvania, and another is to prevent, possibly, the Van Sweringens from continuing to control a group of railroads some of which the commission would not allocate to it under its consolidation plan.

In the debate on the resolution Mr. Parker also called attention to the Delaware & Hudson Company. He also said that the resolution gives the committee power to investigate the holding of any railroad securities, regardless of whether such holding may constitute control.

Such an investigation was suggested by the commission in its annual report and the suggestion was accepted with much more alacrity than is usually displayed by Congress when the commission makes recommendations. In fact the investigation now to be undertaken is expected to postpone for a long time the consideration of consolidation legislation for which the commission had been asking during the last four or five years.

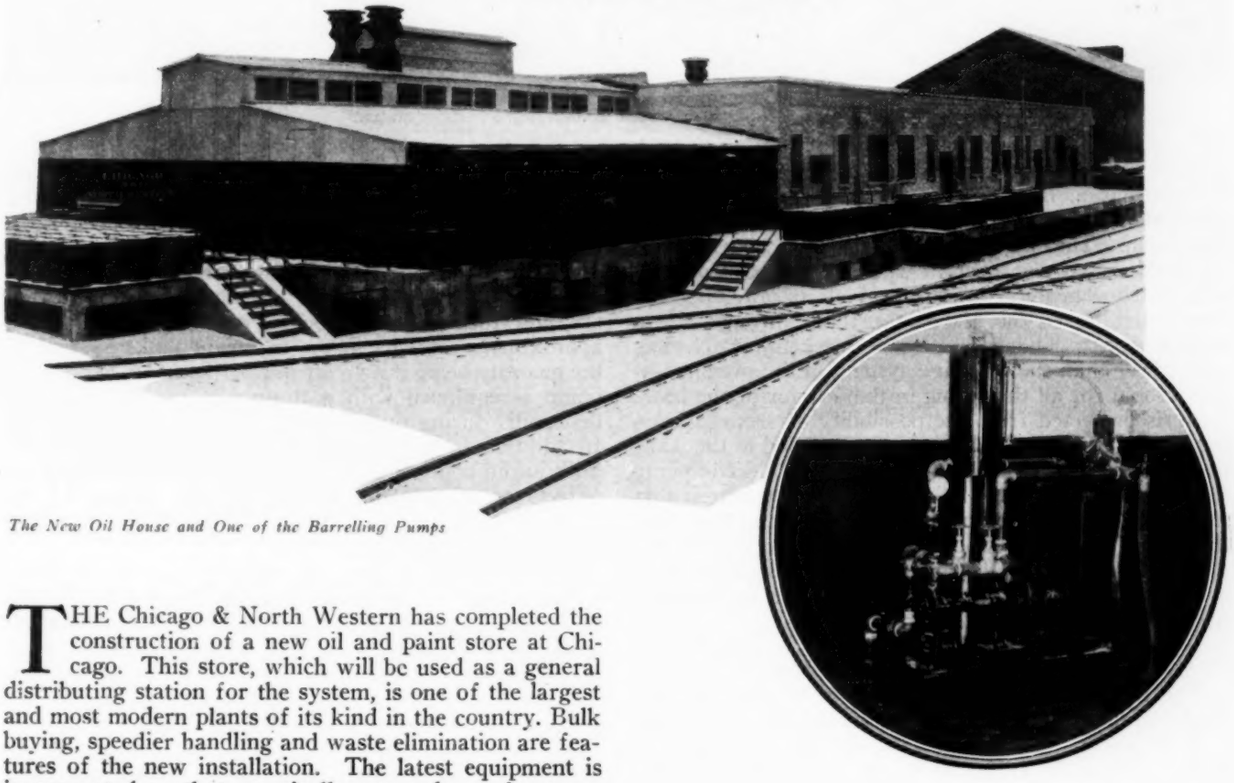
Mr. Parker said that the investigation would require the investigation of books, perhaps in distant cities, and that a subcommittee would be sent to do such work in some instances rather than require the books to be sent to Washington.

* * *

The Baltimore & Ohio's "Capitol Limited" Ready to Leave Chicago

Chicago & North Western Improves Oil Handling

Builds one of country's largest and most modern distributing plants at Chicago



The New Oil House and One of the Barrelling Pumps

THE Chicago & North Western has completed the construction of a new oil and paint store at Chicago. This store, which will be used as a general distributing station for the system, is one of the largest and most modern plants of its kind in the country. Bulk buying, speedier handling and waste elimination are features of the new installation. The latest equipment is incorporated so that practically every drop of a score of different oils is not only pumped but measured automatically. Weather is met by controlled temperatures, while incombustible construction, fire walls and non-spilling pumps protect the plant against fire. Machinery for refining oils, mixing boiler chemicals and preparing distillates is also installed.

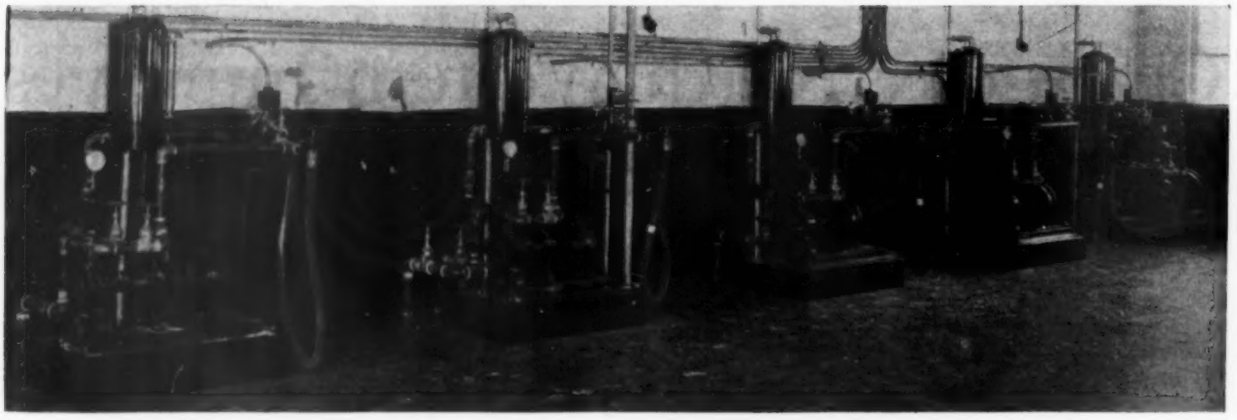
Construction of New Plant

The new plant, which replaces facilities over 50 years old, consists of a brick and concrete building 50 ft. wide and 150 ft. long, with a covered platform 50 ft. wide and 57 ft. long and side platforms, while beneath the building and platforms is a basement approximately 50 ft. wide and 207 ft. long. The floors, platforms and roof are of reinforced concrete, supported on concrete-encased steel beams and posts, while the walls are of brick.

The basement is 12 ft. 7 in. high and is divided into four rooms by brick fire walls. One of these rooms is 127 ft. long and contains all of the tanks in which oil is stored. There are 31 steel tanks, ranging from 800 to 10,000 gal. each—a tank for every kind of oil which is carried in bulk. The tanks are rectangular, built with riveted and welded seams and with manholes and drains. They do not rest on the floor but are supported several inches above it to facilitate cleaning. The tanks are fitted with piping to receive oil from tank cars or other containers and the oil is drawn from the tanks through other pipes connecting with pumps on the upper floor, the oil being elevated by air pressure applied to the tanks through another set of piping. These tanks are installed so as to be accessible from all sides and to allow passageways between them. The tanks and piping are painted a light gray and the entire arrangement of tanks and pipes is adapted to give this room a decidedly clean and orderly appearance.

About two years ago the Chicago & North Western began experiments in refining oil used in the crank cases of rail motor cars and other automotive equipment. The work was successful and two machines are now employed at the Chicago shops for this purpose. These machines and also equipment for mixing chemicals for softening water in locomotive boilers, and equipment for making other chemical preparations, including disinfectants for stock cars, are installed in a second room in the basement. Another room 20 ft. wide and 50 ft. long is utilized for the storage of the chemicals used in the mixing room.

The partitions in the basement consist of brick fire



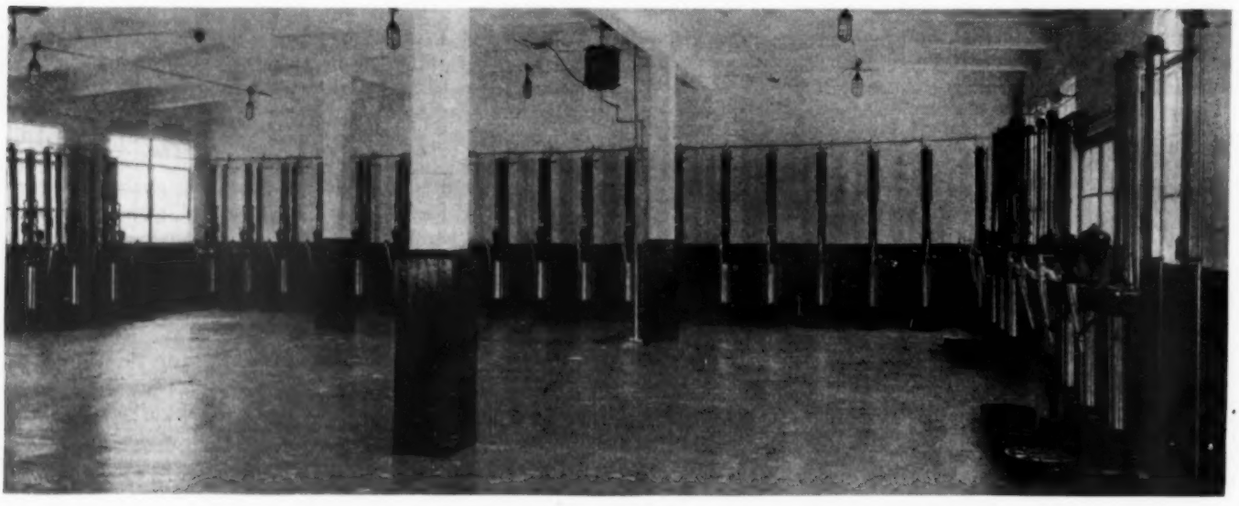
Five of the Six Automatic Barrelling Filling Pumps

walls. The electric lights are of the vapor-proof type and ventilation is afforded by windows in all the side walls, these windows consisting of rough wire glass in steel sash. The oil in the tanks is kept at a uniform temperature by unit heaters which are hung from the ceiling, these heaters consisting of electrically-operated fans which force the air of the room through steam heated coils. The floor of the basement, which was built lower than the drainage system on the premises to make room for all the piping in the interior of the basement, is protected from the possibility of seepage from outside by membrane water proofing applied to the walls during construction, while a sump pit and electric pump have also been installed to discharge any water that might collect. Connecting the basement and the main floor is an electrically-operated elevator and this is supplemented by a concrete stairway which is equipped with a steel door to shut off the basement from the upstairs in case of fire.

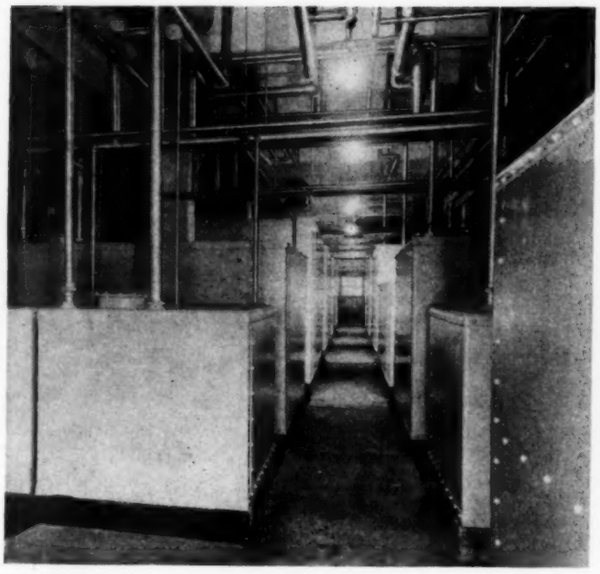
Rapid Pumping

The main floor of the oil house is divided into five rooms by brick walls. One of these rooms, 35 ft. wide and 50 ft. long, is used for the storage of waste and rags; another, 20 ft. by 50 ft., is used for the storage and moulding of driving journal compound, greases, etc.; and another room, 20 ft. by 50 ft., is used for the storage of paints, varnishes and similar supplies. The main oil room is near the center of the building and is 53 ft. wide and 50 ft. long. In this room are 27 five-gal. pumps. Only three of these pumps are hand-operated, the other 24 being operated by compressed air which greatly speeds the oil-handling work. There are indicators on the wall behind each pump to show the approximate contents in the basement tanks as well as the quantity being drawn off during pumping, while each pump is equipped with a drain pan to catch any oil that spills during pumping and to keep it off the floor. In addition to this equipment, several valve boxes are built in the floor, flush with the top, for use in emptying barrels or other containers of oil into certain of the basement tanks. There are no oil tanks on the pump floor of the new plant.

All containers of five gal. capacity or less are filled by the pumps in the main room, but the work of filling oil barrels is carried on in a separate room. This room is 20 ft. wide and 50 ft. long and contains six electrically-operated pumps, so connected as to handle nine different oils. With these units, 50-gal. barrels are filled at the rate of approximately one barrel every two minutes. The equipment is such that the filling can proceed without constant attention by the oil man, and spilling or overflowing is avoided by an arrangement which automatically shuts off the flow of oil when each



In the General Service Room with the Five-Gallon Pumps—Mostly Air Operated



In the Basement of the New Oil House

barrel has been filled to a predetermined amount set by the operator when the pumping starts.

There are windows of wire glass in steel sash in all the side walls in the oil house and, as in the basement, the rooms are equipped with unit heaters and vapor-proof electric lights. As a fire precaution, the switches for these lights are installed outside the building, where other lights are provided to facilitate platform operation. The inside doors of the building are all-steel and the outside doors are steel of the sliding type. In building the floors, a metallic hardener was used to give an enduring wearing surface, and between the built-up roofing and the concrete slab forming the roof of the building is a one-inch ply of fibre insulation to keep the inside surface of the house from sweating. Ventilators are installed in the roof as a precaution against the accumulation of inflammable gases when the windows are closed and all inside surfaces, including the floors, are painted. Both wash-room and locker facilities are among the conveniences provided for employees.

The building is constructed between the two tracks serving the main storehouse and the plan is to use one track for receiving the oil and the other for loading cars with oil for outside points. Concrete platforms are provided along each side of the building for this purpose, while the covered platform at one end of the building is utilized for storing oil barrels. The canopy above this platform is made of corrugated transite supported on a wrought-iron structure reclaimed from the old building, and it has a monitor in the center to afford light and ventilation. This canopy is designed to protect the oil from excessive heat in summer and heavy snowfalls in winter. A concrete ramp connects the oil house platforms with the platforms of the storehouses, and all doors are wide enough to allow tractors to operate throughout the plant.

Previously large quantities of oil consumed by the North Western were purchased in barrels which were received at Chicago for distribution or shipped direct by the producers to the outside stores. With the new facilities, all oils and similar supplies will be received at Chicago in tank line compartment cars and rebarrelled for local shipment in company-owned equipment.

It is anticipated that the oil requirements for outside points can be purchased and handled much more economically than by the previous method. The S. F. Bowser & Company installed the oil-handling equipment in the new plant. The new warehouse is operated under the jurisdiction of A. E. Clifford, general purchasing agent, and under the direct supervision of D. W. Corcoran, general storekeeper.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended January 18 totalled 847,353 cars, a reduction as compared with the corresponding week of last year of 84,508 cars and a reduction as compared with 1928 of 37,330 cars. The reductions were in part due to severe weather conditions. Decreases as compared with last year were reported as to all commodity classifications and all districts. All classes except coal and coke also showed decreases as compared with 1928 but the Eastern and Pocahontas districts showed increases as compared with that year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, January 18, 1930

Districts	1930	1929	1928
Eastern	195,049	212,906	194,093
Allegheny	171,322	186,253	176,792
Pocahontas	57,384	58,606	50,058
Southern	135,356	142,216	144,962
Northwestern	99,105	111,219	108,609
Central Western	120,529	143,533	135,938
Southwestern	68,608	77,128	74,231
Total Western Districts	288,242	331,880	318,778
Total All Roads	847,353	931,861	884,683
Commodities			
Grain and Grain Products	37,461	48,165	48,903
Live Stock	26,833	32,226	33,474
Coal	194,177	215,074	167,791
Coke	11,167	12,906	10,544
Forest Products	46,794	58,836	62,692
Ore	8,052	8,356	8,240
Merchandise L.C.L.	232,027	239,170	243,219
Miscellaneous	290,842	317,128	309,820
January 18	847,353	931,861	884,683
January 11	863,191	914,438	907,301
January 4	776,259	798,682	754,247
December 28	.....	638,445	667,974
December 21	.....	842,483	900,620
Cumulative totals, 3 weeks	2,486,803	2,644,981	2,546,231

The freight car surplus for the week ended January 15 averaged 462,621 cars, a decrease of 13,613 cars as compared with the preceding week. This included 161,626 coal cars, 245,962 box cars, 26,721 stock cars and 13,931 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended January 18 totaled 55,819 cars, an increase over the previous week of 4,070 cars but a decrease of 2,372 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
January 18, 1930	55,819	35,416
January 11, 1930	51,749	32,639
January 4, 1930	44,310	31,247
January 19, 1929	58,191	38,839
Cumulative Totals for Canada		
January 18, 1930	151,878	99,302
January 19, 1929	161,399	105,783
January 21, 1928	181,326	102,347

The D. & R. G. W. Installs

Centralized Traffic Control

on 32 Miles of Single Track

The running time of freight trains reduced over one minute for each mile

By B. W. Molis

Signal Engineer, Denver & Rio Grande Western

THE Denver & Rio Grande Western installed a centralized control signal system between Provo, Utah, and Midvale as a part of the 1929 improvement program. The decision to make this installation was based on the successful operation of centralized control installed during the previous year through the Tennessee Pass tunnel in Colorado, as described in the *Railway Age* for October 12, 1929, page 856.

The Provo-Midvale installation includes 32 miles of single track extending between two important stretches of double track—the one on the east extending from Helper, Utah over the Wasatch Range at Soldiers Summit and on down into the heart of Salt Lake Valley for 77 miles to Provo—while from the other end of the single track at Midvale, double track extends for 11 miles to Salt Lake City. In order to increase the capacity of the single-track section and to expedite the movement of important traffic in general, the centralized traffic control system was installed, including power operated switches, spring switches and controlled signals, by means of which the train movements are now directed by signal indication without written train orders.

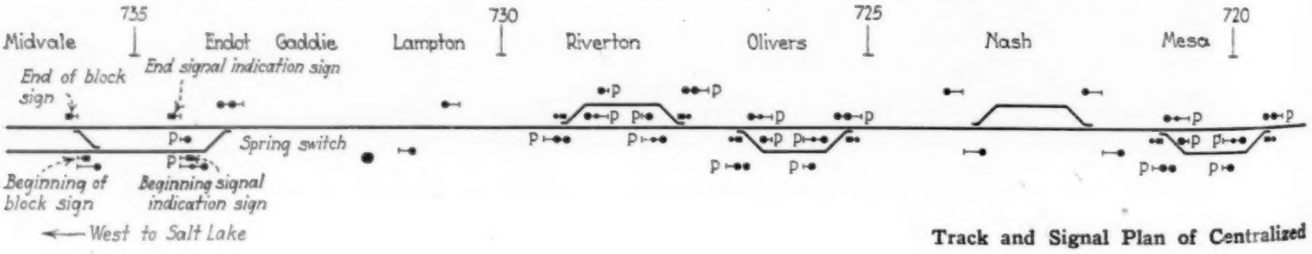
Traffic and Character of the Line

The territory involved is an ideal location for such an installation because of the type of traffic and the physical characteristics of the line. The traffic is high class through business, including six passenger and a maximum of 24 freight trains daily, the maximum tonnage of freight trains being 6,000 adjusted tons. There are no heavy grades in this section of single track, the maximum in either direction being 0.65% per cent, and no excessively sharp curves, the maximum being slightly over 3 deg.

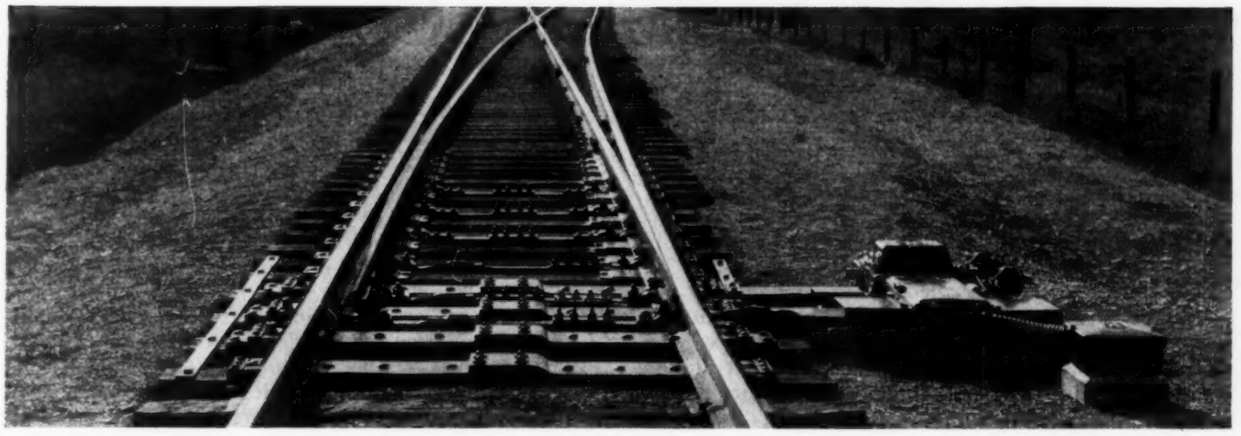
The West Switch at Olivers

Prior to the installation of centralized control, the track was practically rebuilt. All cuts and fills were widened to a standard of 24 ft., and additional gravel ballast was applied to make a total depth of 18 in. The old rail was replaced with 110-lb. rail, and at all passing tracks and ends of double track, high speed No. 18 turnouts with rigid manganese frogs and 24-ft. switch points were installed. Heavy 1-in. by 8-in. through insulated gage plates and adjustable rail braces were provided for these switches. With this type of construction, trains may be operated through these turnouts at high speed with safety.

Eight passing tracks are included in this 31-mile section of single track, and in order to insure sufficient flexibility in train operation, six of these were equipped with power-operated switch machines at each end, while spring switches were installed at the ends of double track. The other two passing tracks were not equipped



Track and Signal Plan of Centralized

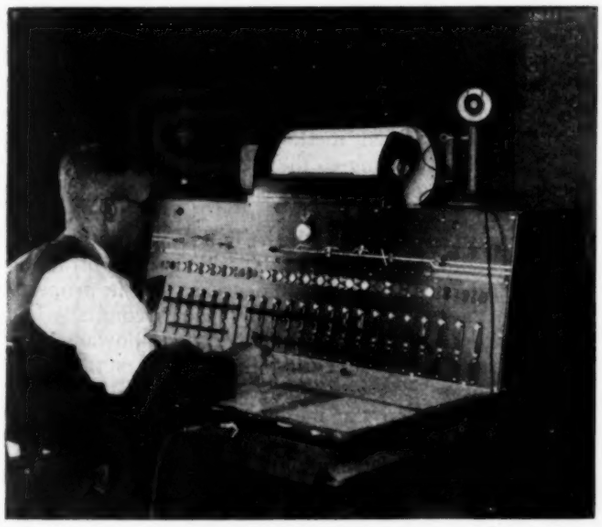


No. 18 Turnouts With Heavy Gage Plates and Adjustable Rail Braces Are Used for the Power-Operated Switch Layouts

with power switch machines because a check of train operation showed that these tracks would not be required after the new system was in service, as they are located close to the end of double track or near adjacent passing tracks.

The Control System

The General Railway Signal Company's unit-wire type of centralized control system is used to control



The Control Machine at Lehi

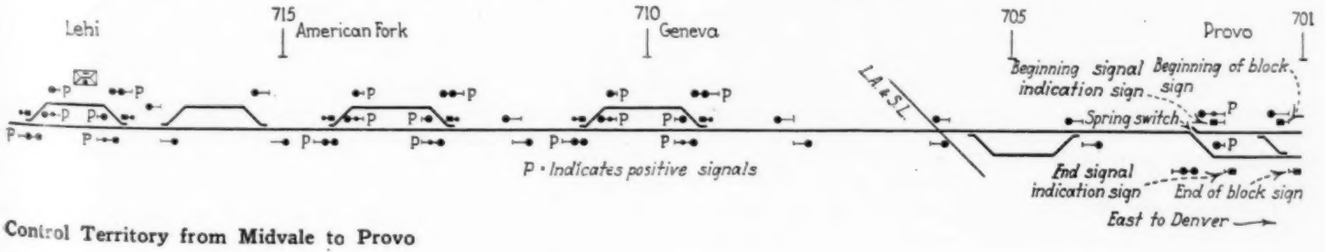
the power-operated switches and the signals which direct train movements. The control machine is located in a new fire-proof tower which was constructed for this purpose at Lehi, Utah about midway between the ends of the double track. The signals are the color-light type and the switch machines are the Model 5-B equipped with selector levers to permit hand operation when making switching movements.

A 550-volt alternating current power circuit extends throughout the territory to provide power for charging the Exide batteries used for the operation of the switches and control circuits as well as for the emergency operation of the signals. At each end of double track and at each end of every passing track there is a small sheet-metal building which houses the relays, batteries, etc., as well as including a booth for a telephone to be used by trainmen when communicating with the operator at Lehi. All underground circuits from these houses to signals, switch machines and the rail connections are run in Kerite armored parkway cable.

Excellent Results Being Obtained

Prior to the installation of centralized control, trains were operated by time-table and train orders. A careful study of train delays indicated that if some quick means of giving trains proper notice to proceed were available, movements would be greatly expedited. The delays were extremely costly because 75 per cent of the tonnage trains in the territory were on overtime.

Preliminary study indicated that all freight trains operating in the territory could be advanced by means of the new facilities approximately one minute per mile —31 min. per train. A check of the actual performance after the facilities were placed in operation on October 31, showed that the estimated savings were conservative, as actual performance since that time shows that freight trains had been advanced more than one minute per mile during the first month of operation, without affecting the movement of passenger trains. Other substantial economies were effected by reducing the number of operators and dispatchers while there was also a decrease in fuel consumption.



Control Territory from Midvale to Provo

I. C. C. Appeals to Congress

Commission urges legislative definition of value to fit the O'Fallon method

WASHINGTON, D. C.

UNBOWED by the decision of the Supreme Court last May in the O'Fallon case, and bewildered and appalled at the magnitude and complexity of the task of valuing the railroads in conformity with its rulings, the Interstate Commerce Commission is seeking a way out of the valuation muddle by appealing to Congress for a definite statutory declaration of policy, amounting to a "legislative determination of the weight to be given the various elements of value," omitting the factor of present cost of old property.

Reiterating its previous objections to "a rate base fluctuating with variations in the cost of reproduction," the commission suggests to Congress an amendment of the present law to authorize a method of valuation intended to produce results "substantially similar" to those obtained by the O'Fallon method but also to "reduce the task of bringing valuations up to date to a purely accounting process." Such a declaration of policy would, of course, be subject to review by the court, the commission recognizes, but it thinks that if accompanied by a clear statement of the reasons therefor a legislative definition of "value" might be welcomed as a great help to the court as well as to the commission.

These views are expressed in a letter from Commissioner Eastman as chairman of the commission's legislative committee to Chairman Couzens of the Senate committee on interstate commerce, in reply to a request for views on Senator Howell's resolution which would direct that valuations be determined in accordance with the principles and methods approved by the commission in the O'Fallon case. The resolution was based on a view that the Supreme Court had annulled that order merely because the commission had not compiled with the law which required a consideration of present costs, although the court also said that the commission had "disregarded the approved rule" in failing to discharge the duty imposed by Congress. The commission points out that this joint resolution does not amend any of the provisions of the interstate commerce act, and therefore that it amounts to a direction to the commission to follow a method which has been found by the Supreme Court to be inconsistent with the duty imposed by section 15a, without in terms undertaking to modify section 15a.

"For this reason," Commissioner Eastman says, "it may be that the proposed joint resolution, in its present form, is not the best way of accomplishing that which is apparently sought to be accomplished. Another way would be direct amendment of the interstate commerce act." This is followed by a discussion tc show that "if the statutory requirement in section 15a had been that the commission ascertain value in precisely the same way that it did ascertain it, the order could not have been annulled, because it would then neither have been in disregard of the will of Congress nor would it have resulted in confiscation."

Commissioner Woodlock disagreed with the views of his colleagues as expressed in the letter, declaring that the law of the land which governs valuation "rests upon a constitutional and not upon a legislative foundation."

"I do not believe," he said, "that the 'O'Fallon rule' or the 'reasonable investment' rule—or any other 'rule' of similar nature—of determining value for rate making purposes can by any form of legislation be made 'the law of the land.' Value for rate-making purposes is a fact to be found by a judicial process and is not a relation to be fixed by a process of legislation . . . it cannot be changed by statute. Nor can it be affected by declarations of 'policy' by the legislature. That its application under provisions of section 15a entails some administrative difficulties is probably true, but these difficulties, I venture to think, are by no means so great as they may appear to many people and are certainly not insurmountable. But be they great or small the situation is the same so far as the law is concerned."

The letter was dated January 20 but was not made public until after the commission had listened for nearly two days to oral argument in the O'Fallon case as to how it should proceed to make an order in compliance with the court decision.

Modified Method Suggested

Under the modified method which the commission now suggests, according to the letter, "up-to-date valuations at any time would be determined by taking the cost of reproduction new at the 1914 unit prices of the property existing on the original valuation date, plus the then value of the lands, adding or subtracting the subsequent net increase or decrease in the property investment account as shown by the accounts when correctly kept, adding further a proper allowance for working capital and deducting the balance standing in the depreciation reserve."

This differs from the method used in the O'Fallon case only in that it would eliminate all increment in land values after the original valuation date and any allowance for "other elements of value," while it would limit the depreciation deduction to the amount provided for by actual charges to operating expenses. It would, however, deduct from the final value the full amount of the depreciation balance based on a theoretical estimate of depreciation, whereas the court has announced the principle that the depreciation allowed for in making a valuation must be actual as determined by actual inspection of the property. In the O'Fallon case the land value was adjusted to "present value." The exact method used in the O'Fallon case is open to the objection from an administrative point of view, Commissioner Eastman says, "that the basic value cannot be brought up to date by purely accounting methods. It requires in addition continual reappraisals of lands and continual physical inspections with respect to the element of depreciation. We believe that by a modification of the method similar results can be obtained in a way which will eliminate most of this work, and the expense and possible delay in-

cident thereto, and reduce the task of bringing valuations up to date to a purely accounting process."

Repeating much of the argument included by the commission in its O'Fallon decision as to the advantages of a "stable" rate base, Commissioner Eastman takes the position that the discretion allowed the commission to fix a percentage of "fair return" affords sufficient flexibility and assurance of just treatment of capital.

In support of the argument the letter refers to testimony of an engineer of the American Telephone & Telegraph Company that the average cost of the plants of the Bell companies is at about the current price level, because so much of the property was built during the past ten years and that some was built at prices higher than now prevailing. It adds that the same is probably true of the electric power utilities and refers to testimony by Owen D. Young, chairman of the General Electric Company, recently before the Senate committee, in which he expressed a preference for a rate base fixed on the actual investment and not on reproductive value, saying that the latter is very likely to go down again. "While this condition does not yet exist to the same extent in the case of the railroads, because of the smaller percentage of plant which has been created in recent years, the soundness of the underlying principle can not, of course, be dependent upon this fortuitous circumstance," Commissioner Eastman says. "It should be added that for a substantial number of railroads the 'new' property, in terms of cost, considerably exceeds one-third of the entire property, new and old, now in existence. In our opinion a rate base fluctuating with variations in cost of reproduction can not in the long run be regarded as a protection to private property, but on the contrary is demonstrably dangerous to such property."

Commissioner Eastman says that while it was the "supposed" failure to consider current or reproduction costs which was the ground for annullment (although the commission thinks the court was in error in this conclusion of fact), the court specifically refrained from passing upon the weight to be given this element or value in the event of a reconsideration. He refers to three of the elements of value mentioned in *Smyth v. Ames,* the amount and market value of the bonds and stock, the probable earning capacity and the sum required to meet operating expenses, and says: "We are unaware of any instance where these particular elements have been given weight in the ascertainment of value for rate-making purposes, or of any instance where a value has been rejected by the Supreme Court because any one of them was not given weight. It is a necessary conclusion that while all elements of value recognized by the law of the land must be *considered* in the ascertainment of value for rate-making purposes, individually they need only be given such weight, if any, 'as may be just and right in each case'." He also directs attention to the rule of rate-making in section 15a by which rates are to be based on aggregate values. Summarizing the situation, so far as the power of Congress is concerned, the letter continues:

> This Commission has no natural or inherent power with respect to the regulation of railroad rates or the ascertainment of values in connection therewith. The power which it has is derived solely from Congress, which is the source of all such power and may exercise it as it sees fit, so long as it does not transgress Constitutional limitations. Study of the decisions of the Supreme Court also shows that in interpreting these limitations the Court has laid down a rule which is in no way a mathematical formula and is dependent upon an exercise of reasonable judgment, a determination of what is "just and right in each case." And this is true, not only of the ascertainment of "fair value," but also of the determination of what is a "fair return." Nor has the court as yet undertaken to set any definite limits to the exercise of such reasonable judgment.

A Differentiation Between Past and Future

> In considering the extent to which the power of regulation possessed by Congress is circumscribed by Constitutional limitations, a differentiation should also be made between the future and the past. We entertain little doubt that Congress has practically a free hand in fixing the conditions under which future investments shall be made in interstate railroad properties. Whatever conditions were fixed, investments would be made in the light of and subject to such conditions. The question, so far as Congress is concerned, would not be one of Constitutional power but rather one of expediency and wisdom. In the case of existing property, however, acquired through past investments, the situation is otherwise, for with respect to such property the Constitutional limitations upon public regulation are unaffected by any prior stipulation of conditions.
>
> But even as to existing railroad properties, we believe that it is not only appropriate but highly desirable that Congress should, by definite direction to this Commission, indicate its views as to how we should exercise reasonable judgment in arriving at both "fair value" and "fair return." Fundamentally, as has been shown above, this is not a question of technical law but a question of what is "just and right." There is, therefore, every reason for a definite declaration of public policy upon this matter in the first instance from the fountainhead of legislative power rather than from a mere agent of Congress, which is what this Commission is. The results of such a declaration would, of course, be subject to review by the Supreme Court, if it were contended in any instance that they transgressed Constitutional limitations; but in that event we feel sure that a broad declaration of public policy from the legislative branch of the government, particularly if accompanied by a clear statement of the reasons therefor, would be of great help to the Supreme Court. It could hardly be otherwise. One of the great difficulties, indeed, which the courts have in the past encountered in dealing with this subject has been that the legislative bodies, Federal and State, have never undertaken to make such a declaration. It would in effect amount to a legislative determination of the weight to be given the various elements of value, a matter which, as we have seen, the Supreme Court has thus far carefully refrained from foreclosing. * * *

Objections to Reproduction Basis

> A "fair value," or rate base, which is dependent upon and varies with current costs of reproduction is peculiarly unstable. It is unstable not only because of constant fluctuations in the value of money, the point which is usually emphasized, but also because of changes in methods of construction. The extensive introduction of labor-saving machinery and devices with a view to reducing construction costs would in itself, under this method of determining the rate base, have an unfavorable reaction upon investors. From the standpoint of the owners of the railroads, this instability might be advantageous if the variations in costs of reproduction could be depended upon to have a consistently upward trend. But this can not be depended upon. Nor, from the standpoint of the users of the railroads, can it be depended upon to have a consistently downward trend.
>
> The danger in such fluctuations to the owners of the railroads is much enhanced by the fact that so large a part of the investment is represented by securities which are limited to a fixed or maximum rate of return, such as bonds and preferred stock. Approximately two-thirds of the outstanding securities are of this nature, and if common stocks which pay a fixed dividend under leases are included, the percentage is greater. Under such circumstances the whole benefit from fluctuations upward in the rate base flows to the holders of the common stock alone, and in the same way they must bear the entire burden of fluctuations downward. Serious fluctuations downward might easily wipe them out. * * *

Valuation an "Incubus"

> And there is a further very important practical reason for adopting a rate base which is not only stable but capable of ready ascertainment. Valuation, under the methods which have generally been pursued, has been the incubus of public

regulation in this country for many years. Hundreds of millions of dollars have been spent upon it, and it has been a constant source of strife, litigation, and prolonged delay in the fixing of reasonable rates, as well as a prolific breeder of wild and extravagant claims. This has been particularly true of State regulation of public utilities. In the case of the railroads our valuation has been going on for the past 16 years and the basic work has not yet been wholly completed. The lack of valuations brought down to date has made it necessary in fixing a general rate level to use estimated figures which could not well be attacked in court, but when our valuations are at length ready for use we shall be faced with the same threat of litigation and delay in rate regulation as have hampered the activities of the State commissions. * * *

Obviously any method of arriving at a "fair value," or rate base, which requires continual readjustments as costs of reproduction vary and real estate values wax or wane, to say nothing of such intangible but controversial matters as "going concern value" and the like, will involve the constant maintenance of expensive valuation staffs, both by the Commission and by the carriers, and will offer continual opportunity for controversy, litigation, and delay. Obviously, also, if a method of arriving at the rate base can be adopted which will be fair to the public and to the carriers but at the same time can readily be applied without the need for continual investigation, reappraisals, and controversy, the result will be a very practical and positive gain for all concerned. * * *

The provisions of section 15a with respect to "fair return" are, in our opinion, wise and statesmanlike. They fully meet the needs of the situation. However the rate base may be figured, they direct us to fix a "fair return" thereon which will afford such assurance of just treatment to capital already invested that the further investment of capital necessary "to provide the people of the United States with adequate transportation" will be forthcoming. It is difficult to understand what more could justly be expected by any one. Moreover, the experience which we have already had and which is recounted in our report in the *O'Fallon case* enables us to say with confidence that a return of 5.75 per cent upon an aggregate "fair value" of railroad property which includes no allowance on the old parts of railroad properties for the rise in current costs of reproduction since the World War will, unless conditions radically change, amply encourage and ensure all needed investment of new capital. And if conditions do change radically, this per cent can be changed.

So much for underlying considerations. If a declaration of policy is to be made by Congress, in our judgment this should be done in a way which will clearly have the effect of definitely amending the provisions of section 15a. Such legislation should specify how the rate bases which are to be used for rate-making and recapture purposes shall be ascertained by the Commission.

S. J. Res. 104 specifies that the rate base shall be ascertained in accordance with the "principles and methods approved in the report and order of the majority" of the Commission in the *O'Fallon case*. Under that method the basic value, as of the original valuation date, is made up of cost of reproduction new at the so-called "1914 unit prices" but allowing the actual cost of property installed after June 30, 1914, less depreciation, plus the then value of lands, plus an allowance for working capital, and plus in many instances a comparatively small additional allowance for other possible elements of value. This basic value is then brought up to date by adding or subtracting the subsequent net increase or decrease in the investment in transportation property as determined from the carrier's returns, by adjusting the deduction for depreciation to present conditions, and by making a similar adjustment in land values. * * *

Effect of the Proposed Basis

Like the method adopted in the *O'Fallon case*, this modified plan would, apart from the deduction for depreciation, result in an amount which would probably in all instances be somewhat in excess of what the property should reasonably have cost, and in many instances materially in excess, dependent chiefly upon the increment in land values over original cost up to the original valuation date. It would be less favorable to the carriers than the *O'Fallon case* method, in that it would eliminate all increment in land values subsequent to the original valuation date and any allowance for other elements of value. On the other hand it would be more favorable to the carriers, in that it would limit the deduction for depreciation to the amount which has been provided for by actual charges to operating expense. No doubt in many instances these modifications, favorable and unfavorable, would substantially offset each other.

In considering whether this modified plan would be just to the carriers, it should be borne in mind:

(1) That, like the *O'Fallon case* method, it allows full increment in value of lands over original cost up to original valuation date, including all parcels, of which there are a multitude, which were originally donated to the carriers by governments, communities, or individuals.

(2) That, like the *O'Fallon case* method, it includes full allowance for all property, of which there is much, charged by the carriers in the past to operating expense or acquired out of surplus earnings after the payment of generous dividends to stockholders.

(3) That the aggregate rate base, so determined, would be coupled with the present liberal provisions of section 15a relative to "fair return," upon which we have commented above.

In our judgment the suggested modified plan would certainly be, under all of the circumstances, no less than "just and right" to the owners of the railroad properties, and it would also insure to the public adequate transportation service. It would have the further advantage that it would tremendously simplify the task of bringing valuations down to date by reducing it practically to an accounting process.

In this connection we call attention to what was said in an earlier part of this report with reference to the character of the provisions of section 15a with respect to *aggregate* earnings and recapture, and their relation to the constitutional protection against confiscation.

The legislation which we suggest is, however, easily capable of modification to fit any differing views which Congress may have with respect to a sound public policy. The important thing is that a definite declaration of the views in regard to this matter which Congress entertains should be made. We believe, further, that any such legislation should be supported by committee reports which will fully explain the reasons therefor, and we shall be glad, if it is desired, to aid in the preparation of such reports and the legislation. It should be added that the legislation which we suggest would make it possible wholly to eliminate the provisions of section 19a of the interstate commerce act for bringing valuations up to date.

Some of the members of the Commission who join otherwise in this report are of the opinion that such legislation as is recommended should be limited in its application to future rate making and future recapture of excess earnings. In the case of rate making its aplication would, of course, necessarily be confined to the future, so that this question really has bearing only on recapture. If Congress should be of the view that the method of valuation which we are here urging for adoption should not or can not properly, for any reason, be applied in determining the amount of excess earnings to be paid by the respective railroad companies during the recapture periods intervening between the effective date of the transportation act, 1920, and the date of the passage of this proposed legislation, then we suggest that a further provision be incorporated in the legislation.

Authority for Agreements With Carriers Asked

This further provision which we suggest would specifically authorize us by such proceedings, formal or informal, as in our discretion may seem necessary and proper, to agree with the respective carriers upon the amounts of excess earnings in these past periods to be paid by them. Our reason for making this suggestion is that present methods of valuation are so cumbersome and so provocative of controversy and litigation, following prolonged proceedings, that as a practical matter it will be almost impossible if the usual methods of judicial procedure are followed, to ascertain and collect excess earnings without great delay and expense, attended by litigation which may react adversely on the public interest. Authority to agree with the carriers would, we believe, enable us to make fair settlements with reasonable promptness which would, under all the circumstances, not be inconsistent with the public interest.

There is, indeed, much to be said for such a plan, even if Congress should be of the opinion that the method of valuation which we are urging can properly be applied to the past recapture periods. We are confronted at present, owing to the litigation which has already ensued over recapture, with a tremendous accumulation of recapture cases covering past periods. Authority to agree, such as we suggest, would in any event greatly help in the prompt disposition of these cases, and the sooner this work can be brought to a current and stable basis the better for all concerned.

Commissioner Farrell does not agree with this recommendation for authority to make agreements with carriers concerning amounts due under the recapture clause of section 15a.

The Feasibility of the I. C. C. Consolidation Plan

The proposed Illinois Central System and the projected amalgamations in the West—Evaluation of plan as a whole

Part II*

By F. J. Lisman
F. J. Lisman & Co.

SYSTEM X consists of the Illinois Central as at present constituted plus many short lines and with two important additions; the 1500-mile Minneapolis & St. Louis and the 1750-mile St. Louis Southwestern. The Minneapolis & St. Louis lines fit perfectly into the Illinois Central System and would give it access over its own tracks to the Twin Cities. The M. & St. L. has been in the hands of a receiver for nearly 7 years and is to be reorganized shortly. Quite likely the Illinois Central, if it were willing to enter the Northwestern territory, could acquire the road at a fair price.

The St. Louis-Southwestern fits well into the Illinois Central, as it connects with it at St. Louis, Memphis and Shreveport, La. This ownership of a road entering Southwestern traffic territory complicates a good many rate situations which may or may not be a good thing. This would make the Illinois Central a system entering practically every freight section territory in the country, not even excepting New England, which is reached from Savannah through its wholly-owned Ocean Steamship Company.

It was rather expected that the St. Louis-Southwestern would be allocated to the Southern Pacific System in order to give that road a direct outlet to Memphis and St. Louis, via the Shreveport gateway.

There are neither financial nor legal complications involved in the accomplishment of this system. It is merely a question of whether the directors of the Illinois Central care to extend into the Northwest and whether they care to pay the price necessary to acquire control of the St. Louis-Southwestern which is owned by a New York holding company.

System XI is built around the Chicago & North Western, to which is added a north and south line from Chicago to the Gulf of Mexico, with comparatively little relevance to the Chicago & North Western proper. In distributing the various lines to the western systems, the Commission had the problem of three fairly self-sufficient companies, each with upwards of 12,000 miles of road. These three companies are the Chicago, Milwaukee, St. Paul & Pacific, the Southern Pacific and the Atchison, Topeka & Santa Fe.

The Union Pacific, a strong system, is very emphatic in its desire not to tie itself up with any of its connecting lines, but prefers to keep open the gateways of Omaha and Kansas City where it wishes to interchange without favor with over 12 connecting lines. While the U. P. has a satisfactory traffic arrangement with the Chicago & North Western, it does not wish to acquire it.

The Chicago & North Western by itself is a system of about 10,000 miles. There are no lines of consequence in its particular territory which can be added to it. Apparently the Commission had to put the Chicago & Eastern Illinois and the Mobile & Ohio somewhere, so it added them to the Chicago & Northwestern. These two roads are controlled by the T. F. Ryan Estate and the Southern Railway respectively and could presumably be acquired on reasonable terms if the board of the Chicago & North Western should desire to extend in the opposite direction from its present lines.

The Chicago, Terre Haute & Southeastern which, to some extent, is parallel to the Chicago & Eastern Illinois, was acquired about eight years ago by the Chicago, Milwaukee, St. Paul & Pacific, the principal competitor of the Chicago & Northwestern. This, however, is rather irrelevant to the situation because the Milwaukee bought the Terre Haute road in order to gain access to a coal field, having none on its own lines. The Chicago & North Western has ample coal in Macoupin County, Ill., south of Springfield, on its division which extends practically to St. Louis.

The Lake Superior ports are drawing traffic ever further to the south. That is, they are now drawing the bulk of the grain clear from the Minnesota-Iowa state line and from nearly all of South Dakota, and supplying that territory with Lake coal. The tendency seems to be for the lakes to gradually draw still further traffic from the south and for the Gulf ports to draw traffic still further from the north. In another decade this competition may meet in Omaha and Central Iowa and diminish the tonnage moving east and west. In view of this, north and south lines may be of increasing importance, but they are much more advantageous to the western systems if they run directly south from the center of their system, rather than south from their eastern termini.

There is no legal or financial obstacle to the creation of this enlarged Chicago & North Western System.

System XII, the Great Northern-Northern Pacific merger, is suggested with practically no additions other than short lines and without the very important C. B. & Q. System. The suggested composition of this system

* Part I of this article, which dealt with proposed systems in the East and South, appeared in the *Railway Age* of January 25, included with which was a 33 in. by 44 in. map showing all the 21 proposed systems.

was almost as puzzling as that of the trunk line situation in the east.

Too Many Railroads in the Northwest?

The clear and outstanding factor is that there is one railroad too many to the Pacific Northwest. There is wasteful competition in the operation of trains and in other ways. The problem is which one of the companies is to be eliminated. If it were suggested that the Chicago, Milwaukee, St. Paul & Pacific were to be merged with the Northern Pacific, the C. B. & Q. would have to go to the Great Northern. Undoubtedly the Northern Pacific would object to this. The Commission therefore, was in a great dilemma and it probably has not solved it.

There is no legal impossibility about segregating the Burlington from the two northern lines; however, the Burlington stock to the extent of one-half to each is pledged under the mortgages of the two proprietary companies. It would be possible to release it by retiring some 200 millions of bonds. This might become a desirable operation for both companies if money becomes cheap a few years hence. Besides this, somebody would have to buy 170 million of C. B. & Q. stock which is probably easily worth $200 a share. Where is the group to do this in order to operate the road independently? Another way out might be the purchase of beneficial certificates representing the C. B. & Q. stock subject to the mortgages. This would also be a complex and difficult financial transaction.

The proposed merger of the two companies evidently met with much opposition on part of some of the commissioners, because in the "concurring in part" opinion of Commissioners Eastman and McManamy, considerable exception is taken to it. Commissioner Eastman quotes a paragraph from the law: "In this division of such railroads into such systems under such plan, competition shall be preserved as fully as possible and wherever practicable the existing routes and channels of trade and commerce shall be maintained." On the other hand, the law enjoins the commission that the railroads shall be efficiently and economically operated.

There are probably no two railroads in the United States where as large a reduction of expense could be brought about as by the merger of these two particular carriers and where the communities concerned would still have ample competitive service.

While from a legal and financial aspect the creation of this proposed system is possible, its effectuation along the lines suggested is improbable.

System XIII consists of the Chicago, Milwaukee, St. Paul & Pacific as at present constituted without subtractions, plus two prosperous iron ore carriers at the head of Lake Superior, that is, the Duluth, Missabe & Northern and the Duluth & Iron Range. Both of these roads are owned by the U. S. Steel Corporation and may be obtainable on mutually fair terms.

There is also allocated to the Milwaukee running rights over the water grade route between Spokane and Portland, along the north bank of the Columbia River. The Milwaukee System does not now reach Portland at all. Whether this trackage right will be made compulsory on the proprietary companies of the Spokane, Portland & Seattle, that is the Great Northern-Northern Pacific, in case these two railroads do not merge, is a question for the future.

There appears to be no legal or financial obstacle to the creation of this system.

System XIV consists of the Burlington System by itself with its controlled Colorado & Southern lines, without any subtractions but with the addition of the Green Bay & Western System and the Missouri-Kansas-Texas System.

Green Bay Would Aid N. P.-G. N. If C. B. & Q. Were Included

The Green Bay & Western System has a thin local traffic but forms rather an important cutoff from eastern and Michigan points by a car ferry route across Lake Michigan to the Twin Cities and northwestern points in general. It connects with the C. B. & Q. about 100 miles south of the Twin Cities and would not be of any particular benefit or importance to that system if it became independent. As part of the existing C. B. & Q.-Great Northern-Northern Pacific combination it would be of considerable use as a cutoff to the north of the Chicago gateway.

As the matter stands now, the combination of the Great Northern-Northern Pacific-C. B. & Q. previously referred to is so strong that probably the Commission would not care to strengthen it.

In case of the segregation of the Burlington, the Green Bay & Western would probably be of much more use to railroads having lines not only to the Twin Cities, but to points west and southwest thereof, such as, for example, the Chicago Great Western, with which it connects directly, or the Minneapolis & St. Louis, with which connections could easily be arranged.

The Missouri-Kansas-Texas connects with the Burlington fairly well in the middle of its system and would form quite a good Gulf connection. Inasmuch as it owns a line clear to the Gulf, it is rather curious that the one-half interest in the Trinity & Brazos Valley was left in the proposed C. B. & Q. System because this road is parallel to the M.-K.-T.

There is no financial problem connected with the creation of this system other than the one referred to under System XII; neither does there seem to be any legal problem involved. The creation of a through line to the Pacific Coast for the suggested independent Burlington System is referred to under System XVIII, the Missouri Pacific.

System XV consists of the Union Pacific Railroad and its subsidiaries and tributary branch lines without subtractions, but with the addition of the Kansas City Southern which, apparently, would be of very little use to it except as an outlet to the Gulf for grain traffic. It is interesting to note that 40 years ago the U. P. acquired an outlet which took it toward the Gulf in a much more suitable location. At that time the Denver & Gulf Railroad was part of the Union Pacific System but it was segregated in the U. P. reorganization of the 90's and is now the Colorado Southern, an extremely valuable and profitable part of the Chicago, Burlington & Quincy System.

There is no legal obstacle to the creation of this proposed system but it does not seem likely that the directors of the U. P. would care to acquire the Kansas City Southern.

System XVI consists of the present Southern Pacific System practically as it stands, without subtractions or additions, other than short lines.

System XVII consists of the Atchison, Topeka & Santa Fe without any subtractions but with several additions. It is suggested that the Santa Fe buy the Missouri & North Arkansas with running rights to Mem-

phis. This road does not form any particularly important connection with the Santa Fe System and presumably is merely wished on it because the Santa Fe is a strong corporation from every angle.

Extending the I. C. Toward Kansas City

If the Illinois Central is to acquire the St. Louis-Southwestern, it would appear logical that the Missouri & North Arkansas should be allotted to it in order to give it an outlet toward Kansas City.

Another railroad allocated to the Santa Fe is the Midland Valley, which is a profitable carrier and undoubtedly desired by nearly all the systems of the southwest. It is controlled by Charles E. Ingersoll of Philadelphia and associates, who undoubtedly would be willing to sell to the highest bidder at terms satisfactory to themselves.

The 1,000-mile Chicago Great Western is an important suggested addition to the Santa Fe. The only advantage it would give to the Santa Fe would be access to the Twin Cities over a fairly direct line from Kansas City. The Chicago Great Western's Omaha line would be of no particular use to the Santa Fe, nor would its Chicago-Twin Cities line. However, if put into physical condition like the rest of the Santa Fe System, this road would undoubtedly be a more effective carrier and a better public utility. It is, to all intents and purposes, a separate proposition from the Santa Fe; it is located in a highly competitive territory and is weak in terminals practically everywhere except in Omaha.

The Chicago Great Western does not particularly fit into any one of the systems. It is now in the hands of aggressive traffic people who, quite likely, will do relatively well with it.

It does not seem probable that the directors of the Santa Fe would care to acquire the Chicago Great Western except at a price not at all commensurate with the market price of the stock.

There is no legal or financial obstacle to the creation of the system.

System XVIII consists of the present Missouri Pacific System with connecting short lines without deduction, but with the very important addition of the Western Pacific and entire ownership in the Denver & Rio Grande Western, as well as in the Denver & Salt Lake.

Mo. P. Merger Proposal and the Denver Gateway

The acquisition of these lines would make the Missouri Pacific the dominant road in the State of Colorado and would create a main line between the east and west centering on the Pueblo gateway rather than on the Denver gateway. While theoretically there is competition between San Francisco and the middle west, the Central Pacific Division of the Southern Pacific, together with the Union Pacific, is so overwhelmingly dominant against its only direct competitors, the Western Pacific and Denver & Rio Grande Western, that it seemed important to strengthen this latter route which can easily be done on acquisition or arrangement with the Denver & Salt Lake and construction of the 40 mile Dodsero cutoff which will shorten the distance between Denver & Salt Lake by 171 miles. This road would connect at Denver with the C. B. & Q. and Rock Island lines, in whose interest it would be to develop through business to the San Francisco gateway over this route because this would give them the longest possible haul.

The Western Pacific at present is controlled by Arthur Curtiss James who is supposed to be the largest indirect stockholder in the Burlington through his stock interests in the northern roads. Undoubtedly the Western Pacific would have been allocated to the C. B. & Q. if the Commission had not been very doubtful about its segregation from the northern routes previously referred to.

The allocation of the Western Pacific and Denver & Rio Grande Western to the Missouri Pacific will unquestionably be seriously contested not only by the cities of Denver and San Francisco, but by the states of Colorado, Utah, Nevada and probably California, and the chambers of commerce of the principal cities of these states.

Commissioner Eastman, in his "concurring in part" opinion suggests that the Western Pacific and Denver & Rio Grande Western and the Denver & Salt Lake be made into a separate system. While in mileage such a system would be very much smaller than any of the others, this would appear to be a reasonable solution of the problem; but the fact is that the Missouri Pacific already owns one-half interest in the Denver & Rio Grande Western and that the community of ownership between the Northern Pacific-C. B. & Q.-Western Pacific is very great. This is one of the outstanding cases where consent to stock control given during the last decade has come back to plague the Commission.

There are serious problems connected with the creation of this system from the legal angle only as far as the Denver & Rio Grande Western and Western Pacific are concerned. The financial problem seems to be comparatively easy.

System XIX consists of the Rock Island-Frisco combination with tributary branches and without any subtractions; with only one addition of magnitude. This addition consists of the Louisiana & Arkansas and the Louisiana Railway & Navigation lines with an aggregate mileage of about 800 miles, controlled by the banking firm of Dillon Read & Co. of New York. These lines would link up the St. Louis-San Francisco-Rock Island lines of Dallas with the Louisiana division of the Rock Island & Arkansas and bring all these lines into New Orleans.

This system seems the most suitable home for the L. & A. lines which would constitute new traffic routes which in time would be of considerable importance.

Systems XX and **XXI** consist respectively of American lines of the Canadian National and the Canadian Pacific and propose practically no changes. In the case of the Canadian National lines the tributary branch lines are mentioned and its present one-half interest in the Detroit & Toledo Shore Line is transferred to the B. & O. In the case of the Canadian Pacific the branch lines, particularly the Minneapolis, St. Paul & Sault Ste. Marie branch lines, are not mentioned.

Terminal Properties

There is a long list of terminal properties which are to be dealt with separately. The Commission says: "All terminal properties shall be thrown open to all users on fair and equal terms so that every industry on whatever rails located shall have access to all lines radiating from that terminal and every line carrier reaching that terminal shall similarly have access to all terminal tracks within the terminal area."

Included among the terminal lines is the Elgin, Joliet & Eastern, controlled by the U. S. Steel Corporation, which is really an outer belt line around Chicago, with 130 miles of main line and about 70 miles of branches,

irrespective of important trackage rights. Also the Canton Railroad which was recently acquired by the Pennroad Corporation, presumably in order to keep the B. & O. from buying it.

It is rather curious that the Commission should have allocated some other terminal or industrial facility roads to the trunk lines jointly while it deals with the terminals separately. For example, the Genesee & Wyoming Valley and the Indiana & Northern are allocated to joint ownership.

The plan deals with upwards of 500 short lines, the allocation of possibly one-half of which must be to the particular systems which form their only connection. As to short lines which have several connections or which in some cases carry some through traffic, the propriety of the suggested allocation may arise. All these will have to be dealt with on their merits and in accordance with whatever the evidence at the hearing may develop.

There are all kinds of short lines; some are necessary to the public in their entire length; some may be absolutely unnecessary or not useful; and some may be a partial convenience and necessity to the public. The question is extremely complex, there being but few cases alike. This is a matter of greatest importance, however, because one of the fundamental intents of Congress in framing the Transportation Act was to assure the communities and the people, wherever located, of getting equal transportation facilities for their products, commensurate with general conditions, the same as they are entitled to equal mail service commensurate with local conditions. Heretofore, whenever a short line was allocated to some particular system, the attorneys for the system would claim that the short line was tributary to some other system which might not be represented at the hearing. Now, whenever short line hearings come up, the Commission will presumably have to cite all the connecting lines so the case may be complete.

The allocation of short lines or of the more important lines of course, does not mean that the system will be compelled to pay more than a fair value for such carriers. Undoubtedly, whenever conditions permit, the precedent set in the New York Central merger case, compulsory arbitration, will be followed throughout because this appears to be the logical way of complying with the mandate of Congress.

Much ink has been spilt about the short line problem. From a financial angle it is really not of great importance, because the aggregate value of these lines is not great compared with the whole. While these lines form about 15 per cent of the country's mileage they probably form less than 5 per cent of the physical value and a great many are not entitled in consolidation to be priced at their physical value.

Increased cost of operation of the short lines on account of higher wages paid by the larger systems will in most cases be offset by more efficient operation, lower cost of materials and by more rapid development of adjacent territory.

Disturbing Existing Through Routes

The law says that in consolidation existing through routes must be respected. The Commission also provides for this and undoubtedly will continue to do so whenever mergers are permitted, but it does not necessarily follow that a route competing with the proprietor of some subsidiary line will really get equal facilities in the way of competing in through rates and through services. Promises of such facilities are only too frequently lip service.

Any traffic officer who has endeavored to establish through rates or rates which are not particularly welcome to the proprietary management can testify to this although aggrieved parties may not be willing to talk about this for other reasons, just as boys do not like to talk about the other boys' wrongdoings. It is not considered good sportsmanship to "peach."

The plan of December, 1929, as a whole may be looked upon as more or less another tentative plan, as indicated by the Commission itself, with this difference, as compared with the August, 1921, plan—it is certain that requests for permission to merge within the terms of the plan are more likely to be granted, although upon public hearing the Commission may and, in some cases undoubtedly will, reverse itself.

The Commission is fully aware of the fact that the plan is not perfect and is anxious to facilitate mergers wherever they are in the public interest. One of the first tests will be in connection with the application now pending on part of the St. Louis-San Francisco to acquire the Gulf, Texas & Western which, under the plan, is allocated to the Santa Fe. This is only a 100-mile railroad but it occupies a strategic position between Dallas and Fort Worth on the east and the Panhandle section of Texas on the West. The examiner's report recommends application for acquisition of this line by the Frisco, under certain conditions. The road had been offered to the Santa Fe repeatedly but a satisfactory agreement apparently could not be arrived at. It is quite likely in this particular case there will be a deviation from the plan. There are other similar, but less important, cases pending before the Commission.

The Consolidation Plan ordered to be promulgated by Congress has been a bugbear to the Commission. The Commission has done the best it could with it. Undoubtedly the Commissioners heaved a sigh of relief when an apparent agreement was arrived at! It closes its remarks about the plan with the following sentences:

> Section 5 provides that after we have adopted a plan, as we here do, we may either upon our own motion or upon application reopen the matter for such changes or modification as in our judgment will promote the public interest. Such applications will afford opportunity for further consideration upon adequate recent records of the various parts of the plan.

Now that the I. C. C. has done everything possible for it to do under the law to accelerate consolidation, the whole problem is up to Congress; however, it is not merely a question of what Congress will do, but also what Congress can do, considering the Constitutional limitations.

Eminent attorneys seem to be agreed that the only way to make anyone sell a property which he does not want to sell at all, or at a price which he may consider unsatisfactory, is by the right of condemnation. Neither is it possible at all to make anyone buy a property which he does not want to buy, or the price of which is not satisfactory.

Possibilities of Condemnation in Consolidation

The railroad properties are already devoted to public service. One school of attorneys is of the opinion, therefore, that they cannot be condemned again for the same purpose for the benefit of another corporation; there is no doubt but what they could be condemned by the government if the government wanted to take over the properties for the purpose of operating them itself or for the purpose of leasing them to others. Another set of eminent attorneys is of the opinion that a property could be condemned for the benefit of a greater public service than the one it is now devoted to. Presumably Congress could accelerate condemnation on this latter

theory. There appears to be very much less question as to the right to condemn minority stock interests. In fact, several states have laws to that effect. There is a leading case in Connecticut in which the Higher Court upheld the right of the New Haven to acquire, by condemnation, a small amount of stock in the New Haven & Derby.

There are only two ways of achieving the full economies to arise from mergers; that is, by long time lease or by merger upon complete elimination of the stocks of the minor corporation. In either case, the rights of the minority must be carefully guarded. In many cases state laws provide for this and in the case of the New York Central merger of 1929 the I. C. C. made very careful provision to protect the minority rights of the Michigan Central and the Big Four stockholders.

The problem of compelling action on the part of an unwilling purchaser is more complex. It has been suggested repeatedly that Congress enact legislation which would offer inducements to large corporations to operate under federal charters, under which such corporations would have certain advantages accompanied by the disadvantage of having to acquire properties, the acquisition of which may be suggested to them (or wished on them) by the I. C. C. Such legislation, if passed, could not possibly be effective until it had run the gauntlet of the courts from many different angles, and, surely, in the meanwhile, the companies affected thereby would be very loath to accept the proffered "gifts of the Greeks."

With the present wide and violent difference of opinion in Congress and especially in the Senate, it is extremely unlikely that real constructive railroad legislation will be enacted. Therefore consolidation will surely proceed on its slow and natural course, depending on personal equations and volition, as dictated by more or less enlightened self-interest, tempered by the much burdened and necessarily slow moving Commission.

Presumably our descendants in the Twenty-first century will read in their text books that the period between 1920 and 1950 was a period of railroad consolidations!

Increased Divisions for Barge Line

WASHINGTON, D. C.

THE Interstate Commerce Commission has issued a report and order prescribing increased divisions for the Inland Waterways Corporation out of the joint rail-barge-rail rates between Fargo, N. D., and points in Illinois, Indiana, Iowa and Missouri in connection with its barge line on the upper Mississippi between Dubuque, Ia., and St. Paul and Minneapolis, Minn., for the future and retroactive to September 26, 1927, the date of its complaint. The increased divisions prescribed are less than those asked by the barge line but will require the Great Northern and Northern Pacific to accept less revenue on traffic handled by the barge line than they would if the traffic moved all-rail via the Twin Cities gateway.

At the time the commission prescribed through routes and joint rates between these points it did not prescribe divisions on traffic to and from Fargo, but left it to the carriers to adjust them in accordance with principles it had laid down. The complaint was filed by the barge line after it was found that an agreement could not be reached. Complainant had asked for a basis of increased divisions which in some instances, according to the report, would exceed the differential between the all-rail and the rail-barge-rail rates. The defendant railroads contended that they should receive the same revenue as if the traffic moved all-rail.

The commission's report says there is evidence in the record which leaves "doubt as to whether the barge service upon the upper Mississippi is, or is likely to become, more economical than rail service," but that it is the intent of Congress that this new form of service, "admittedly an experiment," should be tried out "in order that it may prove or disprove its economic worth." The report points out that one of the principles laid down by the commission to guide the barge line and its rail connections in negotiating divisions of joint rates is that "it is fair that the rail lines should receive the same revenue as they would receive if the traffic moved all rail by the same gateway," but that it has stated that this principle is subject to qualifications. The rail lines "are not fairly entitled to the same divisions as they would receive all rail where those divisions have not been largely determined by the relative amount and cost of the service rendered, but in substantial part by considerations extraneous to the service, such as protection of the long haul, diversion of the traffic to other gateways, etc." It has further indicated that in determining the fair divisions of the rail lines, two tests may properly be applied: "First, the general level at the gateway of divisions of joint all-rail rates upon which traffic moves in reasonable volume, in other words, of rail divisions which are designed to accommodate and encourage rather than discourage the movement of traffic; and second, the results derived from the application of a rate prorate basis, using as factors the first-class rail rate between the port of interchange and the interior point and the first-class barge rate between the port of interchange and the port of origin or destination." The report continues in part:

It is defendants' position that here the all-rail divisions meet the tests which we laid down in these general principles. They are divisions of rates upon which traffic moves in volume; they were not designed to protect a long haul or to divert traffic to other gateways; and they represent an agreement between the carriers north and south of the Twin Cities which has continued for upwards of 25 years, at least so far as class rates are concerned. It appears that the joint all-rail class rates between Fargo and the points in Illinois, Indiana, Iowa, and Missouri here involved are divided 55 per cent to the lines north of the Twin Cities and 45 per cent to the lines south, subject to local rates as maxima. This basis applies regardless of the length of the haul performed by the latter lines, which varies from 47.6 to 71.9 per cent of the entire through service. Rates based on combinations are divided as made. In the case of joint commodity rates, there is no uniform basis of divisions. Many of them divide in the same way as the class rates, but in numerous other instances a special basis was agreed upon at the time when the commodity rate was established. Out of 74 commodity rates shown in an exhibit filed by defendants, 33 divide on the class-rate basis, 26 divide on a basis more favorable to defendants, and 15 divide on a basis less favorable. The percentages which they receive range from 37 to 72 per cent and average about 56.5 per cent.

Defendants contend that the joint rates in question should be divided into two parts at the Twin Cities, as if only two lines were participating in the traffic, and that these portions should remain unchanged regardless of the number of lines participating in the haul south or north of the Twin Cities. This, they say, is the rule followed in the case of the all-rail rates, and they justify it on the ground that there are, by way of illustration, single-line routes between Fargo and the Twin Cities and between the latter and Chicago. The theory is that if multiple-line routes wish to compete with these single-line routes, they should be permitted to do so, but that their connections beyond the Twin Cities ought not to be required to accord them larger divisions, in the aggregate, than the single-line routes would receive.

The difference between the existing all-rail divisions received by defendants and those which they would receive under the

rail-barge-rail basis sought by the barge line exceeds the amount of the differentials between the all-rail and rail-barge-rail rates. Thus, on a shipment from Chicago to Fargo, the proportion of the first-class rate accruing to defendants under the barge line basis would be 25.7 cents less than they receive on all-rail shipments, whereas the differential between the all-rail and rail-barge-rail rates is 13.5 cents. Defendants argue that it is unreasonable to require the rail carriers to participate in joint differential rates and at the same time shrink their divisions in an amount in excess of the differentials. They also point out that on the barge line basis the lines south of the Twin Cities would receive divisions which are in excess of the rail-barge rates between the inland point and the Twin Cities.

Complainant declares that this condition is due to the subnormal level of the factors south of the Twin Cities, to which reference has already been made. The barge line, moreover, would in most instances receive as its proportion of the rail-barge-rail rates less than its local rates between Dubuque and the Twin Cities.

Defendants introduced exhibits showing their earnings in recent years on book investment. They emphasize the fact that in these years they have failed to earn 5.75 per cent. However, the earnings of complainant in its operations on the upper Mississippi are manifestly less favorable than those of defendants, so that if financial needs were given weight, the result would be to the advantage of complainant. But we have found, for reasons which were fully stated in *U. S. War Department* v. *A. & S. Ry. Co.*, 92 I. C. C. 528, 545-547, that the factor of financial weakness ought not to be given weight in fixing complainant's divisions.

On the other hand, we are not persuaded that we should accept defendants' contentions that they are justly entitled to the same divisions on rail-barge-rail traffic as they now receive on all-rail traffic. They offer little justification of these all-rail divisions, except the fact that they represent an agreement of long standing. This fact is entitled to some weight, but the competition for traffic between the Twin Cities and Chicago is obviously so great, in view of the number of available routes, that it is not at all unlikely that the northern lines have had a strategic advantage in the bargaining over these divisions. Moreover, as has already been indicated, the all-rail divisional arrangement is blanketed at both ends and its full scope is not shown of record.

There is more to be said in favor of defendants' proposition that the rates should break into two parts at the Twin Cities, and that these parts should remain the same regardless of the number of lines which see fit to participate in the traffic. There are no doubt situations where such a scheme of divisions is appropriate and just, but we do not believe that it can properly be adopted here. Barge-rail service is essentially different from all-rail service; in many respects it is inferior and it carries a lower scale of rates. It is manifestly the intent of Congress that this new form of service should be tried out in order that it may prove or disprove its economic worth. It is not like a situation where existing all-rail service is being duplicated for merely competitive reasons, and the barge line's divisions ought not to be discounted upon the theory that it is introducing unnecessary multiple-line service.

In case of the barge line, its local rates between the Twin Cities and Dubuque are based on the corresponding all-rail rates. The southbound all-rail first-class rate of 83.5 cents we have found to be depressed, and there is doubt whether the northbound rate of 90 cents is on a proper level. Moreover, although the barge line has made its local rates 20 per cent less than these rates, there is some evidence of record in regard to its cost of service, and that evidence leaves doubt whether the barge service upon the upper Mississippi is, or is likely to become, more economical than rail service. But if this service is not less costly than rail service, then there is no justification for rail-barge-rail rates made differentially lower than the corresponding rail rates.

The barge service is admittedly an experiment, and the experiment is based on the theory that it can afford to operate at rates made differentially lower than the rail service. At present, the policy of the management is to make this differential in general 20 per cent of the rail rates between its ports. We have, generally speaking, followed this policy in prescribing rail-barge and rail-barge-rail rates, and plainly if the experiment is to demonstrate the soundness or unsoundness of the policy and the theory which underlies it, the divisions of the joint rates ought to conform therewith.

It will be noted that in the method of applying a rate prorate to a multiple-line route approved in 151 I. C. C. 91, as modified by the discussion in 156 I. C. C. 94, 101, allowance is made for one terminal service performed by the originating line and for another performed by the delivering line, but that no allowance is made for performance of any such service by the intermediate line. As a matter of fact, in the case of rail-barge-rail operation, intermediate terminal service is performed at both ends of the barge haul in the interchange between the barge line and the rail carrier. In our opinion, however, the barge line is not entitled to any concession in divisions on this account, for the theory on which the rail-barge-rail rates are constructed is that barge-line operation is sufficiently economical to absorb the expenses of this additional terminal service and still permit of rail-barge-rail rates made differentially lower than the corresponding all-rail rates. Whether or not this theory is sound remains, of course, to be demonstrated.

We find that just, reasonable, and equitable divisions of the joint rail-barge-rail rates in issue between Fargo, N. Dak., and points in Illinois, Indiana, Iowa, and Missouri in connection with the barge line operated by complainant between St. Paul and Minneapolis, Minn., and Dubuque, Iowa, will be arrived at as follows:

From the present first-class all-rail rate corresponding with the rail-barge-rail rate to be divided, deduct 30 cents and apply a rate prorate using the following factors:

For the haul between Fargo and the Twin Cities, the present local first-class rate for such haul, minus 30 cents.

For the haul between the Twin Cities and Dubuque, the present northbound local first-class rate for such haul, minus 30 cents.

For the haul between Dubuque and the inland point in Illinois, Indiana, Iowa, or Missouri, the present local first-class rate for such haul, minus 30 cents.

To the portion thus obtained for the haul between Fargo and the Twin Cities, add 15 cents; from the portion for the haul between the Twin Cities and Dubuque, deduct the differential between the all-rail first-class rate between the points in question and the corresponding rail-barge-rail first-class rate; and to the portion for the haul between Dubuque and the inland point in Illinois, Indiana, Iowa, or Missouri, add 15 cents. Then ascertain the percentages which each of these resulting amounts is of the rail-barge-rail first-class rate between the points in question; and apply these percentages to the rail-barge-rail rate to be divided to obtain:

1. The rail division between Fargo and the Twin Cities.
2. The barge divisions between the Twin Cities and Dubuque.
3. The rail division between Dubuque and the inland point in Illinois, Indiana, Iowa, or Missouri.

In obtaining division percentages by the use of this formula, the carriers are at liberty, for purposes of simplification and convenience, to divide the territory into groups and use percentages for such groups based on typical hauls. Permission to do this is given because it has been suggested that the formula is unduly complex for practical use. An application shows that it would produce the following percentages in the following instances:

Between Fargo and	Percentages (1)	(2)	(3)
Chicago, Ill.	47.6	22.2	30.2
Springfield, Ill.	45.4	22.9	31.7
Centralia, Ill.	42.6	22.4	35.0
Cedar Rapids, Iowa	53.9	25.5	20.6

The differences between the percentages in these cases, which are typical of comparatively long, short, and medium rail-barge-rail hauls, show that the group principle can easily be used without consequential sacrifice of revenue by any of the carriers.

We also find that there should be a retroactive adjustment of the divisions since September 26, 1927, upon the above basis found just, reasonable, and equitable.

It should be noted that the class-rate structures in western trunk-line and official territories are under consideration in investigations now pending for decision before the Commission. If after the decisions in those investigations, any or all of the parties herein wish to bring this case again to our attention for possible revision of our findings, they will be at liberty to do so without prejudice. It is to be assumed that self-interest will cause the parties to keep such records of this business as will enable them to show definite operating results under the divisions presented herein.

WOODLOCK, *Commissioner*, dissents.

R. A. WILDER, a farmer of Wake County, North Carolina, is the recipient this year of the silver cup which is regularly given by the Southern Railway to the farmer in the southern states who produces the best ten ears of corn. The presentation was made by Governor Gardner in the Capitol at Raleigh on January 17.

The "Daylight" along the Pacific Ocean

Can Coach Travel Be Stimulated?

Southern Pacific de luxe trains not only hold traffic, but increase it

THE Southern Pacific operates two trains intended primarily for day-coach passengers: The Daylight, between San Francisco and Los Angeles, and the Klamath, between San Francisco and Portland, Ore. The success attending the operation of these trains may be judged from the fact that an average of 274 revenue passengers per train are handled on the Daylight in the summer season and 118 in the winter season, while the Klamath averages 163 revenue passengers per train in the summer season and 153 in the winter season. Both trains handle an average of ten cars in the summer and seven in the winter, exclusive of baggage, mail and other head-end cars.

These results were obtained despite highly organized competition from motor coaches as well as from private automobiles. The S. P. also competes with steamship coastwise service and with a number of regular airplane passenger lines, both having regular and comphehensive service.

The increased passenger traffic has been developed by paying particular attention to coach traffic. Realizing that speed and comfort are the two most powerful agencies favoring the railway, as against other forms of passenger travel, the S. P. has used these agencies to the utmost in attracting travel to the rails, and its efforts have met with conspicuous success.

San Francisco-Los Angeles Service

Early in 1922, in the face of a decrease in passenger travel such as was confronting all of the railways at that time, the S. P. determined to undertake an experiment to see just how much of the coach travel could be retained, by stressing the two elements of speed and comfort. Accordingly, the revolutionary expedient of operating a coach train at a faster speed than any other trains was decided upon, and, on April 18, 1922, a special coach train was established between San Francisco and Los Angeles on a 13-hr. schedule, via the scenic Coast division, making the entire distance in daytime. This train was operated on Friday and Saturday of each week and only through passengers were handled, no station stops being made in the 484 miles between San Francisco and Los Angeles. The equipment of the train consisted of regular coaches and a diner.

After successful operation during the summer season, the trains were discontinued for the winter, on November 25, 1922, but the success attending the season's operation was amply sufficient to justify the re-establishment of the train the next season and on April 27, 1923, it was put into service again on the same basis, with the exception that the schedule was shortened to 12 hr. 45 min. The response on the part of the traveling public was immediate. The season had hardly begun when it became apparent that twice-a-week service was inadequate to take care of those who wished to ride the train. Accordingly, beginning on June 10, 1923, the train was operated three times a week, leaving its terminals on Fridays, Saturdays and Sundays. Within a month, this increased service also proved inadequate to handle the business, and the trains were operated four times each week, beginning on Thursday and continuing through, to and including Sunday. Hardly had this third increase in service in less than three months been installed, when it became apparent that even it would not meet the demands of the traffic, so, on July 12, 1923, the train was placed on a daily basis, the thought being that it might be advisable to continue it on this basis through the summer season only. The patronage, however, has been such that this train has been operated daily, winter and summer, ever since, with a constantly increasing patronage.

The great measure of success attending the experiment encouraged the S. P. to make still further improvements in the service. On August 9, 1923, a cabinet lunch car, with cafeteria service, was added to the train, where sandwiches, light lunches and beverages

were obtainable at all times, for such passengers as desired food at a lower price than it was possible to charge on the diner.

Improvements Continued

The S. P. passenger traffic officers, while pleased with the showing that the "Daylight" trains were making, did not let matters rest as they were. They were convinced, and rightly so as it turned out, that an even greater increase in patronage was obtainable if the service could be improved. One of the first of the changes was a further shortening of the schedule to 12 hours, this schedule being 1 hr. 45 min. faster than that of the other trains operated over the Coast division.

On December 6, 1927, the "Daylight" trains were equipped throughout with new coaches, with double swivel-bucket type individual chairs constructed especially for this service. With the opening of the 1928 summer season, there began to be a popular demand for reserved seat space on the trains, and, to meet the demand, a reserved seat car, equipped with 36 wicker and upholstered seats was placed on each train, and the nominal sum of $1 was charged for a seat in this car. This feature increased in popularity so rapidly that, in March, 1929, a second reserved seat car was added on each train, and both cars are being patronized to their capacity.

A further improvement was the addition of observation cars over half the length of which consists of observation platform space, there being seats for 32 passengers on the observation platform proper. The attraction of the mountain and ocean scenery is such that all of these observation seats are filled on practically every run.

The popularity of the train has not been confined to through passengers. Certain of the cities along the line began to wish for an opportunity to share in this service. To meet the demand, on June 19, 1928, San Luis Obispo was made a regular station stop for these trains, followed, on July 28, by Watsonville Junction. On February 14, 1929, additional station stops were inaugurated at San Jose and Santa Barbara, thereby providing service from the terminals to these four cities, as well as intermediate service between the cities. The increased number of passengers has amply justified this change. Recognizing the importance of fast time on these runs, these additional station stops are made without lengthening the schedule, which still remains at 12 hours.

The fast time and the scenic attractions of the Coast division have made these trains a conspicuous success, as is evidenced by the fact that, as compared with their first year of operation, for the year ending August 31, 1929, these trains had an increase of 481 per cent in the number of passengers carried southbound, and 699 per cent in the number carried northbound.

San Francisco-Portland Service

The success of the "Daylight" led the passenger traffic officers to look for possibilities elsewhere. Between San Francisco and Portland, there is a considerable passenger travel using various agencies of transportation. Whereas about one-half of the total number of passengers between San Francisco and Los Angeles consists of tourists, it was not felt that a coach train, without sleeping car facilities, would attract any of the tourist business on the San Francisco-Portland run. Also, this business was well taken care of by several excellent trains, including the Cascade, an extra fare train. So, in this case,. it was necessary to approach the problem from a different angle.

Much of the travel that it was desired to attract here consisted of migratory agricultural workers, who follow the season from southern California to Oregon and beyond, together with people in moderate circumstances to whom expense was a primary consideration. Accordingly, a rate of $15, as compared with the regular fare of $26.96, was established for travel between Portland and San Francisco, 771 miles, on a weekly coach train, which was established on January 21, 1927, southbound, and February 16, 1927, northbound, leaving San Francisco at 3 p.m. on Wednesdays, and Portland at 10 a.m. Fridays, on a schedule of 24½ hours, which compared favorably with the schedules of the other trains operating between the two points. These reduced rate tickets, however, were at first restricted to this special coach train.

This experiment was sufficiently successful to warrant twice a week service within a few months, and such service was inaugurated on March 19, 1927, northbound, and March 22, southbound. Within six months after the inauguration of the service, on July 11, 1927, the travel was sufficient to warrant a tri-weekly service, trains leaving San Francisco on Mondays, Wednesdays and Fridays, and leaving Portland on Sundays, Tuesdays and Fridays.

This arrangement was continued in effect for some ten months, by which time the travel had increased sufficiently to warrant daily service. This was established on May 6, 1928, the trains leaving San Francisco at 8:20 p.m., and arriving at Portland at 8:15 p.m. the following day, and leaving Portland at 10 a.m., and arriving at San Francisco at 10:30 a.m. the following day. Certain schedule changes have since been made to improve the service and the train has increased rapidly in popularity, becoming an important link in the California-Northwest service of the S. P.

At first the $15 fare was limited to this particular coach train, but, by May 1, 1929, it was felt that the

All-Day Lunch Cars Are a Part of the Coach Trains

experiment of reduced fare and fast time in coaches had proved its worth. Accordingly, the reduced fare tickets were honored after that date on all trains between San Francisco and Portland carrying coaches or tourist sleepers. On the same date, the coach train was named the "Klamath," and standard and tourist sleeping cars were added to provide a more complete service. Standard dining cars, together with the all-day lunch cars, are operated on each train.

As previously stated, since the inauguration of this coach train, the receipts have increased 52 per cent on all classes of tickets sold between San Francisco and Portland. Despite the fact that the reduced rate tickets were made good on all trains carrying coaches and tourist cars in May, 1929, the business on the coach train increased 12 per cent in that month, as compared with the same month in 1928, and a similar increase has taken place every month since then.

Advertising

One of the important factors in the success of these trains was the advertising given the service. In the case of the "Daylight," strong advertising was given the train at San Francisco and Los Angeles, the two terminals, large space being used at first. The comfort of the train, its fast schedule, and the beauty of the trip were featured. Since both San Francisco and Los Angeles are tourist centers, this advertising reached a large number of tourists in addition to the permanent residents of these cities and consequently the train became popular with tourists wishing to see California's coast line easily and quickly by daylight.

In the case of the special coach train to Portland, large advertisements were used at the start of the service, gradually being reduced in size as the service became known, finally changing into simple reminder copy. The low rates have been the dominant feature of all coach fare advertising, the fare being emphasized in large type, with a short, simple message following giving the brief details of the service.

These performances on the Southern Pacific would seem to indicate that what are usually termed "coach passengers" will ride the rails in preference to other means of travel if inducements are given them to do so. The two cases are entirely different as to the class of travel using the trains, yet by the application of somewhat different methods to fit each case, the S. P. has been successful in attracting traffic back to its line and developing new traffic.

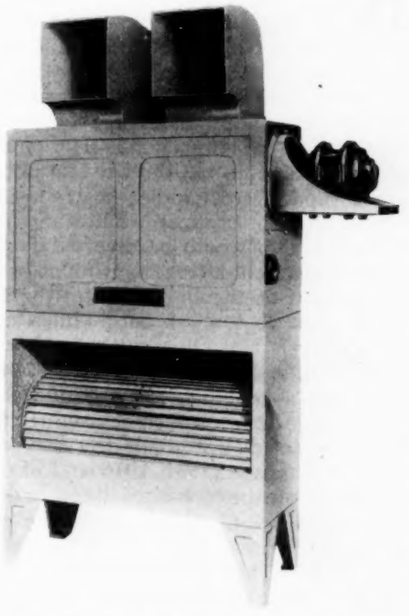
* * *

A Boston & Maine Freight Train at Clematis Brook, Mass.

New Type of Unit Heater Washes and Moistens Air

THE Buffalo Forge Company, Buffalo, N. Y., has developed a new type of unit heater suitable for the heating of large areas, which not only heats the air delivered, but washes and humidifies it as well. This new heater, which is designated the "Buffalo Wetboy," is a compact unit in a sturdy metal housing designed to be set on the floor. The heating and blower units of the new heater are located in the upper part of the housing, and the washer and humidifier occupy the lower half.

The heating element consists of Universal Aerofin tubing of copper and brass designed for pressures up to 200 lb., and is protected by a steel casing to prevent damage to the fins of the heating tubes and to facilitate handling. Special features of the heating element are



The New Wetboy Heater with Intake Grillage Removed to Show the Washer Unit

that it can be readily removed from the heater housing for repair, from either side of the housing, by the removal of end plates, and that steam and drip connections can be made to either end, as desired.

The air delivery unit consists of a series of multi-rotors of the centrifugal type, mounted on a single shaft, which force the heated air into the room on a horizontal plane through two ducts at the top of the heater unit. Drive of the rotors is by an electric motor, direct-connected to the rotor shaft and mounted on a bracket attached to the side of the heater case.

The air washer is located in the lower part of the heater unit and consists essentially of a revolving drum made up of a series of scrubber plates, which dip into a tank of water below the drum as it is rotated by the force of the air current through the unit. The continual dipping of the scrubber plates in the water tank provides wetted surfaces over which the incoming air must pass.

The tank is arranged for either pipe or hose connection, and the water level in the tank is maintained automatically by a float valve. Where no outside water connection is available, the washer can be made effective by filling the water tank manually at such intervals as may

be necessary to keep the scrubber plates wet. Dirt removed from the air settles into a second tank similar to the washer tank, which can be washed out periodically through a drain.

It is said that the Wetboy unit is quiet and efficient in operation, and that it removes about 70 per cent of the dirt and dust from the air. It is also said that the washer unit increases the normal moisture content of the delivered air from 25 per cent to approximately 35 per cent.

New Route Across Pennsylvania Is Opposed by Trunk Lines

WASHINGTON, D. C.

REPRESENTATIVES of the Baltimore & Ohio and the Pennsylvania testified in opposition to the application of the New York, Pittsburgh & Chicago for a certificate authorizing the construction of a new low-grade line from Allegheny to Easton, Pa., at a hearing before C. V. Burnside, assistant director of the Bureau of Finance of the Interstate Commerce Commission on January 28. The opposition was based on the contention that the existing lines have more than ample capacity to handle the traffic that could be developed by the proposed route and that any traffic it would develop would be diverted from lines that have already suffered decreases in tonnage as a result of the competition of the lines serving the coal mines of the Pocahontas region, of barge lines on the Allegheny, Monongahela and Ohio rivers, and of motor trucks.

J. J. Ekin, comptroller of the Baltimore & Ohio, presented as exhibits charts and tables showing that the revenue tons of freight originated on the roads of the Eastern district had decreased 7.51 per cent in 1928 as compared with 1916 and also that the revenue ton-miles of the principal lines had shown decreases as compared with 1923. While the originated tonnage of manufactures and miscellaneous freight had increased 19.17 per cent, the exhibit showed that products of agriculture had decreased 21.28 per cent; animals and products 42.08 per cent; products of mines 13.09 per cent and products of forests 42.7 per cent. He also said that whatever difficulties the eastern roads have had in handling traffic had been confined to terminals and that the proposed new road does not seem to offer any relief from the terminal situation.

Mr. Ekin said the roads east of Pittsburgh have a substantial excess of capacity because of the amount of traffic that has been diverted to river routes and he put into the record a table compiled by the Pittsburgh Chamber of Commerce showing the tonnage of freight consumed or produced in the Pittsburgh district by years from 1912 to 1928 by rail and river, river, and rail routes. This showed that while the river and rail tonnage had increased from 177,071,238 to 200,444,513 tons, and the rail tonnage had decreased from 164,594,915 to 158,338,936 tons the river tonnage had increased from 12,476,323 tons in 1912 to a total of 42,105,577 tons in 1928.

H. T. Newcomb, general counsel of the Delaware & Hudson, who appeared on behalf of the N. Y. P. & C., cross-examined Mr. Ekin in an effort to show that the significance of his exhibits was contradicted by the policy of the B. & O. as indicated in its testimony at a hearing the day before regarding its plans for a new short route from Chicago to New York across central Pennsylvania. Mr. Ekin took the position that there was no inconsistency because the proposed B. & O. route would consist mainly of existing facilities and was intended to divert traffic from the present line of the B. & O. rather than from other lines as well as to effect economies in operating expenses. He said that the interest on the cost of construction of the N. Y. P. & C. would offset the savings claimed as a result of its lower grade. Mr. Newcomb asked if he had taken into consideration the testimony that the new road could be operated for 40 per cent of the revenues, to which Mr. Ekin replied that he had not but that if it could be operated for that it would "make a lot of money" but that it would have to "take a lot of traffic from existing routes" and would have to be "ideally operated." Mr. Newcomb retorted that "that is the kind of operation we are going to have."

E. S. Neilson, freight traffic manager for the Pennsylvania, eastern region, also emphasized the inroads on the traffic of the eastern roads that are being made and threatened by the river transportation, while he said that serious consideration is being given to additional water routes that would also tend to take business from the rail lines. The barge movement on the Ohio and Mississippi rivers, he said, is becoming substantial and the large steel companies in the Pittsburgh district that used to ship their products to the eastern seaboard for transshipment to ocean routes are establishing warehouses at points on the Gulf of Mexico and moving a considerable quantity of their products down the rivers to New Orleans. He said that one of the barge lines had quoted a rate of $5 a ton on steel in lots of over 400 tons, from Pittsburgh to New Orleans, whereas the rail rate from Pittsburgh to Baltimore is 31 cents per 100 pounds, or $6.10 a ton.

Mr. Neilson said that the waterways offer a serious threat to rail competition in this district, especially when the transportation is conducted by industries with their own facilities, because the ralroads have no way of knowing the cost of water operation in order to make rates to meet it. He also said that there is keen competition from the motor trucks and a tendency for large industries to localize their plants to obtain a shorter haul in such a way that an increase in production does not result in increase ton-mileage for the railways.

Mr. Neilson and C. H. Lippincott, coal traffic manager of the Pennsylvania, also analyzed the exhibits introduced by the applicant at an earlier hearing to show the estimated traffic for the proposed new line, giving reasons for saying that in many respects the estimates are too optimistic.

On cross-examination Mr. Newcomb asked Mr. Neilson if he approved the proposed new route of the Baltimore & Ohio. H. W. Bikle, general attorney of the Pennsylvania, objected to this but finally said that the testimony would apply to any proposed new route in the territory under consideration.

THE NUMBER OF PERSONS FATALLY INJURED at highway crossings on the Reading System has steadily declined during the past seven years. The totals, beginning with 1924, are: 39, 37, 34, 32, 32 and 29. This improvement is attributed by a spokesman for the road to the extensive introduction of flashing light signals, which give notice of the approach of trains. For some years this road has installed new signals of this type at the rate of one every month on each of the seven divisions of the system. All of the crossings on which the travel is heavy now have these signals.

Contribution of the Air Brake to Transportation

S. G. Down discusses developments in brake operation at meeting of the New York Railroad Club

MEMBERS of the New York Railroad Club, the American Society of Mechanical Engineers and the Manhattan Air Brake Club took advantage of a joint meeting of the three organizations to pay tribute to the many contributions that air brakes have made toward the development of transportation. The paper read at this meeting, held January 17 in the auditorium of the Engineering Societies building, New York, was entitled "Contributions of the Air Brake to Modern Transportation," and was presented by S. G. Down, vice-president, Westinghouse Air Brake Company. Mr. Down covered in a general way the basic problems relating to the deceleration of steam and electric railroad trains, streets cars, motor buses and trucks and aeroplanes. An abstract of his paper is given in the following paragraphs.

Abstract of Mr. Down's Paper

In no country of the world are people or things more mobile than in North America. We appear to have a complex for moving from place to place at great speeds and also a keen appetite for products at distant points and an urge for the transportation of such products to the markets in the shortest possible time.

In the art of safe, comfortable and economical transportation the air brake plays a major part, as it is a well recognized fact that motion uncontrolled is most dangerous and that ability to stop is at least as important as the ability to start. The motive power of the air brake is necessarily the brake-cylinder piston, and all the mechanism associated with air brakes is for the purpose of admitting, holding, and exhausting air from the cylinder. The more or less elaborate and refined apparatus utilized for this purpose is incident to the time and degree in which the air enters and leaves the cylinder. With increased speed, train length and variations in the weight of vehicles, both light and loaded, the control of brake cylinder pressure becomes more exacting, and continued improvement in the valvular devices has accomplished the desired result.

The Air Brake is Subject to Many Variables

We feel safe in suggesting that there is no other appliance used in the art of transportation that is subject to more variables than the air brake, such as the great variation in the light weight of cars, variation in capacity of cars, the association of empty and loaded cars in the same train, the handling of long empty trains in level service and heavy tonnage trains in grade service, high speeds of passenger and merchandise trains as compared with low speeds of tonnage trains, the grouping of empty and loaded cars in different sections of the trains, extreme variations in temperature as occasioned by cars going in a few days from the frozen north to the heat of the south, and variations in operation and maintenance of the equipment occasioned by the individual views and skill of men scattered throughout the length and breadth of this land.

A problem of which the air brake engineer has always been conscious is that any improved apparatus must both work in harmony with any equipment now in service and contribute toward an improvement in its functioning. This is a matter stressed by George Westinghouse in his paper before the American Society of Mechanical Engineers in 1910. He said, "In the development and introduction of the air brake, I was controlled by the apparent fact that the apparatus would have to be uniform upon all cars to provide for the convenient change of the composition of trains."

Braking Ratio

The power of the device utilized in the control of vehicles must of necessity bear a direct relation to the size of the vehicle and its speed, together with certain local or special conditions under which it will operate. For these reasons a variation in the ratio of breaking power applied to the weight of vehicles for different service is necesssary.

Steam railway passenger-train cars for service operation are braked at a ratio of 90 per cent of the light weight, and for emergency operation, at 150 per cent. The standard freight car for service operation is braked at a ratio of 60 per cent of its light weight; for emergency operation, 65 per cent. Electrically propelled cars in rapid transit service are normally braked at 100 per cent of the light weight and for emergency 140 per cent. Street cars arranged for single-unit operation are braked at ratios varying from 100 per cent to 120 per cent.

The question may readily occur, will not excessive brake work and wheel sliding follow the use of a a braking ratio approaching or equalling the weight of the vehicle. This is not necessarily so because the coefficient of adhesion is much higher than the coefficient of friction. The actual brake-shoe pressure is less than that indicated by the nominal value because some losses occur in the foundation brake rigging. Consequently if the nominal braking ratio is 100 per cent, the actual brake shoe load is something less than the weight on any particular wheel. Since the coefficient of friction is normally less than the coefficient of adhesion, it follows that there is a margin against wheel sliding even when the braking ratio is 100 per cent or more.

The calculated brake force is necessarily subject to some loss in its transmission through the leverage system. Too frequently such loss is excessive due to heavy release springs, weak construction, excessive friction or interference, high leverage ratio and lack of equalization. The design and application of the foundation brake rigging warrants the most careful consideration of the engineer.

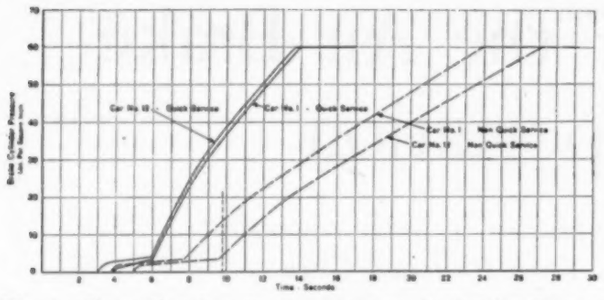


Fig. 1—Chart Showing the Improvement in Service Transmission With the UC Passenger Car Equipment

The clasp form of brake is most desirable for heavy cars as it permits the heavy brake work to be distributed over two shoes per wheel, thereby keeping the shoe temperature at a low degree with resultant higher coefficient of friction. It also eliminates longitudinal thrust on the journal bearings and the tendency to force the journal brass out of its normal position.

During the past 60 years' development of the air brake, practically no change has been made in the basic braking ratios mentioned, because they are more or less fixed by adhesion limits and, therefore, not subject to the varying problems confronting the pneumatic apparatus which necessarily has passed through several major changes.

Electric Control of Air Brakes on Freight Cars

The air brake engineer, like the transportation engineer, is constantly on the alert for means to eliminate time so as to offset the increase in stopping distance caused by increases in the speed and weight of vehicles. The time factor applies both to the relative operation of the valves on the head and rear end of long trains, whereby more nearly simultaneous action may be obtained, and to the build-up of brake-cylinder pressure to its maximum.

Among the various types of brakes tested, during the 50-car brake trials on the Burlington in 1886, was one having electrically controlled valves. However, owing to electrical difficulties and the satisfactory results obtained with the quick-action features which were then placed in the triple valve, the pneumatic action proved itself sufficiently satisfactory to eliminate electric control.

The question of controlling brakes on freight trains electrically has been reviewed many times during the past forty odd years, and has not been considered favorably owing to the improvements made in the pneumatic equipment whereby the time of application has been reduced. With the electrical problems that would have to be met, and the fact that electric control could not be obtained until all of the cars now in interchange were equipped, which number about 2½ million, it is not considered a practical brake.

Passenger Car Brakes—The Universal Valve

Passenger and express-train service is now adequately served by a brake device known as the Universal valve. This valve possesses improved features such as quick service, quick action, graduated application, graduated release, high and quick build-up of cylinder pressure during emergency applications and a protection feature that insures an automatic emergency application of the brake if the brake-pipe pressure falls to a predetermined point.

Fig. 1, compares the development of brake-cylinder pressure on two 12-car trains, one with quick service, the other without. On the train without quick service, at the end of 9¾ sec., there is 14-lb. brake-cylinder pressure on Car 1 and on Car 12 the pressure is but 3 lb. In contrast with this, the quick-service train shows no substantial difference in brake-cylinder pressure at any time between the front and rear ends. Slack action from inequalities of brake-cylinder pressure at any given time is, therefore, eliminated so far as it is chargeable to the action of the air-brake devices.

The more prompt and uniform application, made possible by the quick service feature, also results in a shorter stop as illustrated by Fig 2, which shows speed-stop-time curves for two trains, one having U-12 Universal valves, the other U-12-B. From 60 m.p.h. the train without quick service stopped in 41¼ sec., the quick-service train in 38¼ sec. There is a gain of approximately seven per cent in time and stopping distance. From 30 m.p.h. the comparative stopping times were 23 and 20¾ sec. This figure represents a gain of approximately 10 per cent in time and stopping distance.

The Pneumatic vs. the Electro-Pneumatic Brake

Prior to the introduction of the quick service feature in the Universal valve, provision was made whereby the valve could be actuated electrically and a train so equipped was operated for a period on the Pennsylvania between New York and Washington, D. C. Smooth and satisfactory service was obtained. However, with the development and introduction of the quick-service feature in this valve, the difference in action between pneumatic and electric operation on the test train of 12 cars was so slight that, for steam railway service, the pneumatic operation was considered adequate.

Fig. 3, shows the comparative build-up of brake-cylinder pressure on a 12-car multiple-unit train having UEA-12-BC equipment, first, when operating as a purely pneumatic brake and, second, as an electro-pneumatic. It will be noted that with the electro-pneumatic operation, the brakes on the first and twelfth cars started to apply at the same time, one second after movement of the brake-valve handle, and the pressures continued to develop at the same rate. On the train having the pneumatic equipment, the brakes on Car 1 began to apply two seconds after the electro-pneumatic train, and Car 12 began to apply one second later. From

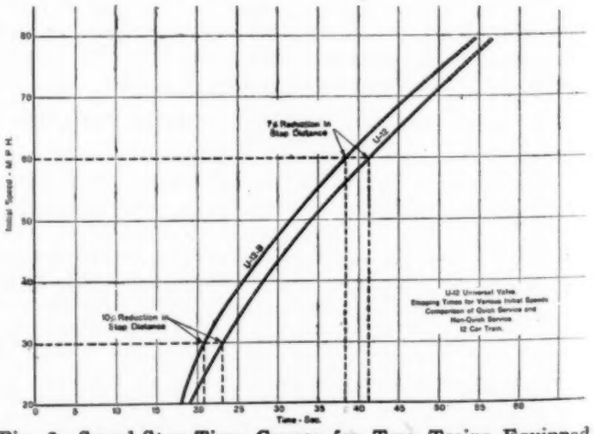


Fig. 2—Speed-Stop-Time Curves for Two Trains Equipped With U-12 and U-12-B Valves Respectively

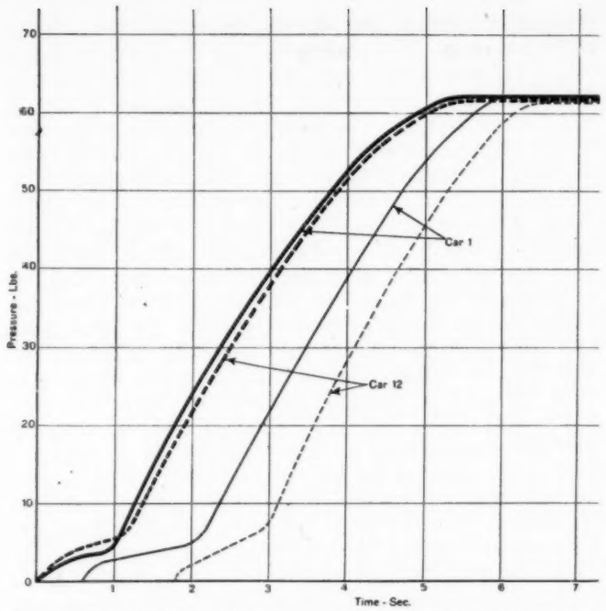


Fig. 3—Comparison of Pneumatic and Electro-Pneumatic Operations of Universal Valve Equipment—Heavy Lines Show Electric-Pneumatic and the Light Lines Pneumatic Operation

then on the build-up of pressure on Car 12 lagged about ¾ sec. behind Car 1.

Universal brake equipment electrically actuated is in service on roads in and around New York, and in our opinion the necessity for electric control is largely dependent on the density of traffic where seconds must be reckoned with. Therefore, each local problem must be carefully studied before deciding on the type of equipment to be used.

Empty-and-Load Brake for Freight Cars

Freight cars through improvements in design and the use of stronger materials are developing a great variation between the light and loaded weight. Today cars are contemplated of 60,000 lb. weight with a capacity of 90 tons, providing a gross to tare ratio of four to one. It will be observed that with a braking ratio of 60 per cent of the light weight the 90-ton car when loaded will have only 15 per cent braking ratio. The effect of this low braking ratio is most detrimental when such cars are associated in trains with cars having higher braking ratio because of the difficulty of slack control, and in heavy grade service special measures have to be taken so that this reduced braking ratio will be sufficient to overcome acceleration due to grade. To meet this situation, the empty-and-load brake was developed. This involves the use of two brake cylinders, one of which is used when the car is empty and both when under load. Changing from empty to load position is accomplished through a manually operated lever on each side of the car. The change-over mechanism is manually operated to load position and automatically to empty. The automatic control from load to empty position is actuated by a reduction of pressure in the auxiliary reservoir to a predetermined amount as, when a car is set out on a siding to be unloaded and the reservoir pressure is reduced, the mechanism automatically changes over to empty position.

An extreme variation in gross to tare ratio on freight cars is found on the modern coal cars of the Virginian. These cars weigh 75,000 lb. and have a capacity of 120 tons. In view of the extreme capacity of these cars, they are equipped with a special form of empty-and-load brake which involves the use of three brake cylinders. The braking ratio is 40 per cent empty and loaded. There are 2,000 of these equipments operating satisfactorily in trains of 100 or more cars and the general average tonnage handled in a train of these cars is 12,000 tons.

Equipment for Self-Propelled Cars

One of the outstanding developments of rail transportation of late has been the gas-electric rail motor car. This form of vehicle has grown during the past few years from a straight gas-driven car weighing about 40,000 lb. to the gas-electric or Diesel type weighing as much as 190,000 lb. and capable of pulling trailers. This form of vehicle, which in reality is a locomotive in addition to its ability to carry passengers and freight, presents air-brake problems that have required the development of new equipment.

This new form of brake resembles somewhat the No. 6-ET Equipment, standard on steam locomotives, except that it has special features required to offset the objectionable results incidental to the length of piping between the brake valve and the distributing valve, provides for double-end cars, and includes safety features whereby under normal one-man operation, should the operator become incapacitated and remove his foot from the protection devices, the brake would automatically apply in emergency.

O'Fallon Case Arguments

WASHINGTON, D. C.

FOR seven hours on January 23 and 24 the Interstate Commerce Commission listened to arguments on the O'Fallon case in the light of the Supreme Court decision of last May. Members of the commission indicated by their questions that they particularly desired counsel as to how much weight to accord to present costs. Those who spoke for the O'Fallon, Frederick H. Wood, Leslie Craven and R. H. Kelley, had a ready answer that in the case of a road like the O'Fallon, that has shown ability to earn 10 per cent on its cost of reproduction in competition with its neighbors, the full cost of reproduction less depreciation should be used, but they asked that each case be considered on its own merits and there was no one to speak for the other roads.

Other counsel, John E. Benton, Donald R. Richberg and Walter L. Fisher, who are more concerned with the treatment of other roads than with the O'Fallon case and who, incidentally, have been advocates of the prudent investment theory in the past, told the commission it would have to do the best it could in deciding how much consideration of present costs would be necessary to satisfy the court, and Mr. Fisher and Mr. Richberg both suggested the step which the commission had already taken earlier in the week, of appealing to Congress for an amendment of the law.

Mr. Wood, who opened the argument for the O'Fallon, took the position that, on the statement of facts represented by this road, "the decision of the court requires the commission to give dominant and controlling weight to its cost of reproduction, less de-

preciation, at current prices, however much or little weight may be given thereto in some other case or some other statement of facts."

He pointed out that the O'Fallon is so located that the demand for its use is such that at competitive rates, concededly no higher than necessary to support a national system of railroad transportation, and in competition with 28 other carriers, it had been able to earn during the recapture years, and for a period ten years prior thereto, at the rate of 10 per cent on its full cost of reproduction at a post-war level of prices, while the railroads in its group and in adjoining groups failed to earn 5¾ per cent on a valuation predicated upon the lower pre-war level of prices.

While the court did not decide what weight should be given to the element of reproduction cost, he said, it was not necessary to do so because it held that the commission must apply the rule laid down in its prior decisions and as authority for its decision it cited six cases, the Smyth v. Ames case, the Consolidated Gas case, the Minnesota rate case, the Southwestern Bell Telephone case, the Bluefields case and the McCardle case, in each of which the rule stated by the court in this case was both expressed and implied. The Southwestern Bell case, he said, was based on a finding similar to that of the commission in the O'Fallon case and in it the court gave an enunciation of the application of the rule in approving a valuation greater than the cost of reproduction less depreciation.

"The commission's report," he said, "was a frank and courageous invitation to the Supreme Court either to modify its previous decisions or hold that the rules applicable in determining the value of local public utilities was not applicable to railroads. The court declined to do either. This being so it would appear to be the duty of the commission to determine the value of the O'Fallon in accordance with the rule as expressed and applied by the decisions of the court. It does not follow that every railroad should be valued at its full cost of reproduction less depreciation. There may be some whose value is even less than original cost. If the value is to be fixed at less than reproduction cost it must be because of the existence of some fact of record warranting such determination. There are no such facts of record in this case.

"The Supreme Court made the cost of reproduction new less depreciation dominant and controlling in the absence of other controlling circumstances to the contrary. Where the economic justifiability of a railroad is sustained by the record, the general rule must apply. It would take strong evidence to fix the value of a property performing public service in the efficient and economical way this does at less than it would cost to put it there."

The other extreme, Mr. Wood said, is represented by the case of a railroad "ripe for abandonment," in which the commission could find a value not only less than cost of reproduction new but less than original cost, but in between lies a large variety of intermediate cases. He submitted that one of the errors inherent in the report of the commission was the idea that it was its duty to lay down a formula for universal application to all railroads instead of to determine the value of this particular railroad in the facts under review.

Mr. Wood said the O'Fallon is willing to adopt the figures of the Bureau of Valuation as introduced in evidence in this case as to costs of reproduction which represented an index of approximately 175 per cent of the pre-war costs, and he put into the record a table showing the valuation on this basis for the various years but with 15 per cent added for going concern value. If this were a rate case, he said, he would take the position that the value should be based on the 1923 costs as fairly representative of the period, but in a recapture case it might be argued that it must consider the price level of each recapture year.

Leslie Craven, counsel for the western group, Presidents' Conference Committee, who said that he did not appear in this case for the committee or for any group of roads, said that since the evidence shows that the O'Fallon would have been built even at the costs prevailing in the recapture period, there is no justification for using original cost to pull down the valuation, and that, as the commission said in its report, there is no basis but caprice for any intermediate figure.

He also asked that the O'Fallon case be reopened for the consideration of new evidence as to depreciation in the light of the Supreme Court's recent decision in the Baltimore street railway case that depreciation should be considered in relation to replacement cost rather than original cost. He said that depreciation had been charged to operating expenses in the O'Fallon case on the basis of original cost, which produced a greater net income than the other basis. Later Mr. Wood withdrew the request.

R. H. Kelley urged the commission to decide the O'Fallon case on its own merits regardless of what it may do as to other roads, saying that if it should attempt to adopt a formula to fit this case and others it will later come to a case which that formula will not fit and the commission will be vexed and plagued as a result.

Donald R. Richberg, appearing on behalf of the National Conference on Valuation of American Railroads, repeated much the same argument against the use of reproduction cost that he had made formerly before the commission and the court. He took the position that the commission is faced with a practically impossible task in attempting to comply with the present law and the court's decisions and said that if it finds that the law has been made so vague as to be unworkable, it should report to Congress with a request for legislation prescribing a definite standard.

John E. Benton, general solicitor for the National Association of Railroad and Utilities Commissioners, said the court had not held that cost of reproduction is determinative of value and must outweigh the consideration of everything else. It still holds to the rule of Smyth v. Ames, he said, that the determination of value is a matter of judgment after consideration of all relevant factors.

The value must not be placed so high that to earn a return on it would result in rates higher than the traffic will bear, but if a railroad can earn a fair return on a value higher than reproduction cost that is a factor to be considered. The essential thing, he said, is to show the court that the comparison has conscientiously considered reproduction cost and has given it all the weight it is entitled to.

Walter L. Fisher, who represented the commission in the O'Fallon case in the lower court and in the Supreme Court, appeared on invitation of the commission to express his views. He said the court had annulled the commission's order because it had not given sufficient consideration to the cost of reproduction factor, and recalled that he had told the commission that its record in the O'Fallon case was inadequate. He was unable to say how much weight should be given

to the present level of prices, but he said the commission might have arrived at the result it did by a method which would have been sustained by the court, and he referred to his contention before the court that there was some $50,000 not otherwise ear-marked in the commission's valuation, some of which might be attributed to the weight given to reproduction cost. He said the commission had probably said too little or too much in its report, which had been written by an economist rather than a lawyer, and that he had said when he was first consulted that the commission was going to be embarrassed by its economic discussion.

"No one can answer the question as to how much weight should be given the various elements of value," Mr. Fisher said, "the court has never undertaken to and in its wisdom decided not to throw any light upon it."

Commissioner Meyer remarked that the commission gave weight to present prices to the extent they were reflected in new property added after 1914, but Mr. Fisher replied that it had not changed the figures as applied to the 1914 inventory, and that it had never even reported what the cost of reproduction would be.

"The commission has got to adopt the rule of the court," he said, "and frankly consider the extent to which the changes in prices since 1914 should be reflected. There's your problem and you can't get away from it."

Commissioner Lewis raised the question as to whether the court would sustain legislation, if Congress should amend the law, directing the commission to proceed as it did in the O'Fallon case.

"Not just as in the O'Fallon case," Mr. Fisher replied, although he said he thought if Congress had passed a law making property investment the basis it could not be held to be confiscatory.

Commissioner Aitchison, in asking how the commission can give practical application to the statute, said: "I have been doing a little figuring and find that we will have about 1½ of these valuations each day to dispose of currently, not counting Sundays and holidays, but allowing nothing for vacations."

"You have got to struggle with your problem as best you can and work out certain general principles," replied Mr. Fisher. "If you can't do it you must ask for relief."

Mr. Fisher said he not only joined with Mr. Craven in asking a reopening of the case as to depreciation, but that he urged a reopening of the case in its entirety, because many things ought to be in the record that are not there; as to depreciation, however, he said that while Mr. Craven proposed to reduce the recapturable income by charging depreciation to operating expenses on the basis of replacement cost, the result would be to take more from the final value for depreciation, and also that the commission did not deduct enough depreciation from the 1914 inventory.

Mr. Fisher also objected to the 15 per cent used by Mr. Wood for going concern value, saying that in the McCardle case the Supreme Court had approved an allowance of 9-10 per cent, but because of extraordinary circumstances in that case. In the case of the O'Fallon, he said, the commission should consider that "it is far from improbable that the conversion of coal to electricity at the mines will make the railroad useless."

In his rebuttal argument Mr. Wood said the request for a reopening of the case would be withdrawn and that he considered the record adequate.

A New Design of Switch Lock

THE Railway Safety Switch Lock Company, Boston, Mass., is manufacturing a new type of switch lock which involves a radical departure from the present method of securing switches in proper position by means of padlocks. The new device, known as the "Eversure" safety switch lock, which consists essentially of a cast-iron housing and an enclosed locking mechanism. It can be applied quickly and at small cost to existing switch stands, without interfering with the normal use of the switch.

The "Eversure" lock is designed for operation by means of a standard switch key, so that it can be installed at random, thus making it unnecessary for a complete installation to be made over a district at one time. The key hole is covered by a guard, which keeps

"Eversure" Switch Lock Applied to a Drop-Lever Switch Stand

out rain and snow, and which, by its special shape, acts as a guide for the key, thereby enabling the key to be inserted in the lock with one hand, even in the dark. The locking bolt is controlled by positive action of the key, which cannot be removed from the lock unless the switch is locked in the fully-opened or fully-closed position. This inability to remove the key without leaving the switch locked acts as a constant reminder to the operator to leave the switch safely locked in its proper position.

As a safeguard against tampering by unauthorized or mischievous persons, an extension member, having a hook, is provided in the locking mechanism, which makes it impossible to operate the lock by means of an unsuitable key or other instrument. As a further precaution against meddling, the lock and housing are so attached that they become integral parts of the stand and cannot be removed while in the locked position. "Eversure" locks can be applied with equal facility to any type of drop lever, high switch stand, as well as to ground throw switch stands of various designs and patterns.

The Great Northern has had a number of locks of this type in service for periods ranging anywhere up to five years, and is said to be using them extensively at present.

B. & O. Motor Coach Transfer Under Fire

WASHINGTON, D. C.

A DEMAND by other railroads serving New York City for an investigation by the Interstate Commerce Commission of the practice of the Baltimore & Ohio of furnishing motor coach transportation for its passengers between points in that city and its rail terminals in New Jersey has been precipitated by a tariff filed by the Pennsylvania designed to meet the B. & O. competition by providing for the transfer of parties of 25 or more persons traveling together from, to or via New York City, but without stating the method of conveyance.

The New York Central, the Pittsburgh & Lake Erie, the Delaware, Lackawanna & Western and the Erie have filed with the commission a protest not only asking for a suspension of this tariff but also asking for an investigation of the lawfulness of the B. & O. practice to be combined with its inquiry as to the proposed plan of the Pennsylvania. The tariff is intended to become effective on February 2.

To this the Pennsylvania has replied and while answering some of the objections made in the protest to its tariff it has joined in the request for an investigation provided it is to include the existing practice of the B. & O. The Pennsylvania in its reply says it is now and has been opposed in principle to granting the transfer of passengers without additional charge at or through New York or Newark and that its sole reason for issuing the tariff was to protect its interests against action by the B. & O. It says it has sought to persuade the B. & O. to discontinue its method of transfer but without success and that in 1928 it filed a tariff of its own but later withdrew it. "Much to its regret, the situation has not improved and in order to meet the competition engendered by the policy of the Baltimore & Ohio" it has "felt constrained to file its tariff," I. C. C. No. 13,247.

The protesting roads say that the language of the Pennsylvania tariff is indefinite and uncertain as to the territory from which it applies and as to the means of conveyance and the meaning of the words "persons traveling together." They assert that it "offers free transportation and is therefore illegal" but that if it is to be regarded as a part of the rate it is "improperly and illegally published," and that "a tariff so greatly preferential and prejudicial as between localities served by a single system must be illegal. There can be no reason for the preference other than competition. If motor busses, taxicabs, street cars or subway cars can be supplied at New York by the Pennsylvania Railroad for the free transportation of passengers from Philadelphia and Pittsburgh they can equally be supplied for the free transportation of passengers from Atlantic City, Trenton, Harrisburg, Williamsport and Buffalo." The question is asked as to whether it is intended to provide motor vehicles similar to those provided by the B. & O. In asking an investigation as to the B. & O. the protesting roads say its practice is not covered by any tariff on file with the commission but by a circular issued August 29, 1926.

The Pennsylvania answer denies that its tariff is indefinite, although limited to territory as to which competition with the Baltimore & Ohio is a factor, and says that the provision as to persons traveling together means together from point of origin to destination. It asserts that it is not in contravention of tariff provisions to fail to state the exact method by which the transportation will be effected. The Pennsylvania also denies that it provides for free transportation, saying "it provides for an incidental service available to those who have paid regular tariff charges."

"While, therefore, the Pennsylvania Railroad Company submits that it has filed a lawful tariff, it nevertheless believes that, except for the competitive condition to which it has referred, the proposed privilege should not be granted or extended to the traveling public, and subject to the initiation of an investigation with respect to the policy of the Baltimore & Ohio Railroad Company, it would join with the applicants in a prayer for the suspension of its tariff."

New Fairmont Wheel Reduces Stock

FAIRMONT Railway Motors, Inc., Fairmont Minn., has introduced a new demountable wheel for motor cars which, when used with a special hub also furnished by this company, will fit any motor car regardless of the size of the axle. For this reason and in addition to other advantages, the installation of this wheel will greatly reduce wheel stock investment and simplify store keeping.

Wornout wheels are replaced with new ones by detaching them from the hub, which remains permanently in position on the axle, by removing a few bolts. This hub is furnished in any size and taper of bore and its

The Fairmont 20-in. and 16-in. Demountable Wheels for Motor Cars

permanent character reduces the waste of insulation and bearing casings. It also has the advantage of being stronger and less subject to loosening than the riveted hub and, after all cars are once equipped with it, a stock of one or two of each size is said to be sufficient. No equipment other than a wrench is necessary when wheels are changed and it is not necessary to ship the car to the shop for this purpose, as one man may do the work in the field.

It is necessary to carry only 16-in. and 20 in- wheels and these are furnished in either ¼-in. or 5/16-in. plate. Since they fit handily together in vertical stacks, a large stock may be stored in a small space and the few reserve hubs in small bins. The installation of this wheel and hub reduces wheel stock to two sizes, or four items if both ¼-in. and 5/16-in. tires are carried.

Looking Backward

Fifty Years Ago

The Burlington & Missouri River in Nebraska, constituting with leased portions of other roads 466 miles of line, was taken over by the Chicago, Burlington & Quincy during January through an exchange of stock of the two companies.—*Railroad Gazette,* January 30, 1880.

The Kansas Pacific, after a checkered existence, ceased to be an independent organization on January 24 when the stockholders and directors of that road, the Denver Pacific and the Union Pacific met at New York and voted to consolidate the three corporations under the name of the latter company, with a total capital stock of $50,000,000. The mileage of the consolidated companies is 1,820, exclusive of branch-line mileage.—*Railway Age,* January 29, 1880.

The railway investigating committee of the New York legislature, after spending a year or so in hunting for evidence of railway practices that are contrary to the public good, has issued a report. Among others it recommends the following changes:

Maximum freight rates of five cents per ton mile; maximum passenger rates of three cents per mile; maximum sleeping car rates of $1 per berth or seat, with an initial charge of 50 cents per berth per 100 miles; prohibition of all arrangements for the pooling of freight traffic, and prohibition of rebating.—*Railway Age,* January 29, 1880.

Twenty-Five Years Ago

Thomas F. Brennan has been appointed superintendent of transportation of the Buffalo, Rochester & Pittsburgh, with office at Rochester, N. Y. James E. Gorman, assistant freight traffic manager of the Atchison, Topeka & Santa Fe, has been appointed freight traffic manager. Charles E. Rolfe, assistant general freight agent of the Delaware & Hudson, has been appointed general freight agent.—*Railway Age,* February 3, 1905.

The House committee on interstate commerce in Congress has agreed to present, instead of the Hepburn bill for the establishment of a new Interstate Commerce Commission, the bill of Congressmen Esch and Towner. The new bill, instead of abolishing the present Commission, increases its membership from five to seven and increases the salaries to $10,000. It creates a court of transportation, to be presided over by five judges of the circuit court, the president being authorized to appoint five additional judges.—*Railway Age,* February 3, 1905.

Ten Years Ago

The building of three railroad tunnels in Colorado, the Moffat tunnel, the Cumbres Pass tunnel and the Marshall Pass tunnel, by means of a state bond issue, has been recommended by the State Railroad Commission of Colorado in its first annual report to the governor of Colorado.—*Railway Age,* January 30, 1920.

The continuation of the railway boards of adjustment created by the Railroad Administration to handle controversies arising out of the application of wage orders and other disputes between the officials and employees of railroads is urged by W. S. Carter, director of the division of labor of the Administration, in his annual report for 1919.—*Railway Age,* January 30, 1920.

Because the steel companies have not been sufficiently interested in turning out rails for the Railroad Administration at $47 per ton, that body has taken advantage of the fact that the country is still technically at war because the treaty of peace has not been ratified or proclaimed and has induced the War department to issue orders commandeering 72,500 tons of steel rails to be delivered by March 1.—*Railway Age,* January 30, 1920.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Articles on Current Transportation Subjects, by Prof. L. C. Sorrell. The titles are "Appraisal of Industrial Traffic Management," "Railroad Consolidation," "Motor Transport on the Highway," "Commercial Aviation," "Inland Water Transportation," "Store Door Delivery," "The Container Car," "Political Rate Making," "Railroad Valuation," "Intercoastal Competition," and "An American Merchant Marine." Reprinted from the Traffic World, 51 p. Pub. by Traffic Service Corporation, Chicago, Ill. 25 cents.

Bills Introduced and Laws Enacted Relating to Railway Legislation—State Legislatures, Sessions of 1929, compiled by Committee on Relations of Railway Operation to Legislation. Classified under such headings as "Airports," "Ambulance Chasing," "Boiler Inspection," "First Aid," "Full Crew," "Paint Spraying Machines," "Sanitary Requirements" and so on. 257 p. Pub. by American Railway Association, New York and Chicago.

Some Railroad Material Useful in the Study of Geography—A Brief Memorandum. A note of publications of various periods helpful in obtaining a notion of traffic geography in each of the periods. 4 p. Issued by Library, Bureau of Railway Economics, Washington, D. C. *Apply.*

Statistics of Railways in the United States 1928, compiled by Bureau of Statistics, Interstate Commerce Commission. The 42d annual "Blue Book" with the map of the railways by regions and districts restored (p. xxiii) and the usual tables of statistics on almost everything one can think of relating to railways that make the volume indispensable to anyone interested in transportation. 272 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. $1.40.

Periodical Articles

The Economic Importance to Canada of American Tourist Expenditures, by Donald M. Marvin. Some figures are given as to amounts spent by tourists arriving by train and a number of other ways. Annalist, January 17, 1930, p. 165-166.

German Private Railroads and Side Lines, by A. Douglas Cook. "The extent of the traffic handled by these privately owned railroads is considerable, even when compared with the huge figures of the German State Railway . . . " Commerce Reports, January 13, 1930, p. 122-123.

Let the Interstate Commerce Commission Regulate Aeronautics, by Sam. G. Bratton. Mr. Bratton, who is a Senator from New Mexico, replies to Senator Bingham, whose article was noted in the December 28th Booklist. Public Utilities Fortnightly, December 26, 1929, p. 779-784. Reprinted in Congressional Record, January 14, 1930, p. 1683-1684.

The New Age of Alloys. Some notes on alloys used in automotive, railway, and aviation industries to reduce weight and for other purposes. Illustrated. Trade Winds, January 1930, p. 7-9, 14.

Not a Railroad Grade Crossing in 700 Miles, by Hamilton M. Wright. "Cuba building 32 bridges or underpasses at rail intersections on its central highway." Boston Evening Transcript, January 18, 1930, Automobile section, p. 12.

Pullman Car Kept Roads Awake. "But the new car influenced railroad—and American—history in a still more profound way. It was much more successful than the federal government has been recently in inducing railroad mergers . . ." Business Week, January 22, 1930, p. 39.

The Railroad Consolidations. Editorial comment pointing out transcontinenal facilities that are desirable. Carnegie Magazine, January, 1930, p. 252-253.

Odds and Ends of Railroading

Lifetime Passes

Effective January 1, 1930, the Missouri Pacific began the distribution of a new form of card pass to all employees who have spent 40 years or more in Missouri Pacific service. These passes are good over all Missouri Pacific lines, and expire only upon the death of the employee. Over 700 persons are eligible for this honor.

Locomotive Aids Flyer

The powerful headlight of an Illinois Central locomotive recently saved an aviator from possible injury or death. The flyer, in an airplane which was almost out of gas, was circling over the yards at Clinton, Ill., seeking a landing place in the darkness. Charles Drago, switch engineer, sensing that something was amiss, turned on the headlight of his engine and this illumination enabled the flyer to land safely in a field near the tracks, with both himself and his plane intact.

Fathers-Sons

The Long Island also can make a claim to distinction as a railroad with father-son combinations among its engine crews. In one town, Amagansett, L. I., reside two enginemen, James Eichorn and Raymond See, whose sons have served them as firemen. Eichorn is the senior engineman in point of service on the railroad and two of his sons, James, Jr., and George, have served him as firemen. James, Jr., is now an engineman in his own right and George is assistant road foreman of engines. See's son, Gardner, is his regularly assigned fireman at the present time on his run between Montauk and Jamaica.

That Whistle Again

SHERBROOKE, QUE.

TO THE EDITOR:

Your article regarding the locomotive whistle calls to mind that we published a similar article in our bulletin, and, in view of your remarks as to the shrill, discordant sound of Stephenson's whistle, you may be interested in the remark made a century ago in this connection by Reverend Sydney Smith, a witty divine. He said: "Stephenson's whistle always reminds me of the squeal of a lawyer when the devil first gets hold of him."

G. D. WADSWORTH,
Assistant General Manager, Quebec Central.

Fossils Uncovered

One of the most interesting occurrences in connection with the construction of the Suisun Bay bridge of the Southern Pacific, has been the unearthing by the dredging machines of the fossilized remains of prehistoric animals which roamed through California in the ages past. Fragments of what may have been the bony frame of prehistoric monsters have been brought to light, but so broken and incomplete as to make reconstruction impossible. Amongst these fragments was found a piece of pure ivory about five inches in diameter, and several inches in length, perfectly preserved and as hard as when it was formed. It is believed to be a portion of a mastodon tusk. What is thought to be a ground squirrel's nest or home was dug up, petrified and perfectly preserved. This is probably the first instance on record where a hole has been petrified.

Just One Alligator After Another

"Crocodiles may come and crocodiles may go, but alligators stay with us forever," concludes C. Stevens, section foreman of the Pennsylvania, at Hobart, Ind., after a recent incident.

For years upon years, when anyone wanted to see an alligator at Hobart, he was referred to a circus, the zoo, or the particular part of the earth where such reptiles were wont to romp and play and perchance show their teeth. But to find an alligator on the railroad track near 87 deg. and 15 min. west longitude and 41 deg. and 7 min. north latitude, and particularly on the tracks of the Ft. Wayne Division of the Pennsylvania, was not to be thought of.

A few days ago Mr. Stevens noticed a dark object in the switch at the brick yard at Hobart. An investigation revealed the object to be an alligator four feet in length. An effort to extricate it before the arrival of an engine failed, and Davy Jones' dry-land locker claimed another victim.

This is the second time that an alligator has been seen in that vicinity in recent months. Mr. Stevens is wondering whether alligators have decided to change their place of habitat or whether someone is starting an alligator farm.

Another Long-Time Crew

ALBANY, N. Y.

TO THE EDITOR:

Referring to your article in the issue of December 14th, page 1393, entitled "A Long-Time Crew."

Our No. 10, the fast night train from Montreal to New York, when operating over this division, is manned by the following:

Engineman Matthew A. Coleman,	50	years service
Fireman John P. Ames,	18	" "
Conductor Chas. G. Thayer,	60	" "
Total	128	" "

This betters the record of the Atlantic Coast Line by three years and it may be of interest to you to see the length of service of the entire crew on No. 10 on this division, as follows:

Engineman Matthew A. Coleman,	50	years service
Fireman John P. Ames,	18	" "
Conductor Chas. G. Thayer,	60	" "
Baggageman Wm. A. Tighe,	32	" "
Flagman Fred D. Jones,	32	" "
Trainman Clayton E. Darrah	29	" "
Total	221	" "

J. E. FAIRHEAD,
Superintendent, Delaware & Hudson.

Window Shopping

At this time of year we direct the attention of the more discriminating window shopper to the plate-glass displays in the railroad ticket offices. Start your winter trip at a window and let your imagination go the rest of the way. Imagination requires little baggage, especially if it is going to Florida for the sun-bathing season.

A ticket office in Michigan avenue has a display of art metal cactus. We have never seen such flora along the railroad's route to New York. Perhaps it is nature's substitute for getting stung in Wall street.

At the Insurance Exchange building railroad window art is making hurried throngs stop to have their noses pressed. Western lines' advertising gives California the breaks. However, there are Colorado foothills, grand canyons in natural pigments, Mexican adobe department stores, Texas prune ranches and Arizona mesas during the moulting season.

A Canadian route has dispensed with the usual display of cactus and tropical fruit and goes in boldly for toboggan slides, together with hockey players and other fur-bearing animals.

Another snow scene shows a lot of coaches and family cars floundering in the drift while a train maintains its schedule. Some commuters may not swear to this, but they may do a little swearing.

Above all, don't miss the striking western picture by a modern Remington. This painting of cavalry giving wild Indians the Notre Dame rush is worthy of an Art Institute setting. The Indians have gone, along with railroad ticket scalpers, but we are grateful to one railroad for presenting this stirring reminder of the days of real whoopee.—Gene Morgan, Chicago Daily News.

NEWS *of the* WEEK

On the New York, New Haven & Hartford at Sharon [illegible]

JOHN J. MURPHY, vice-chairman of the South Dakota Board of Railroad Commissioners and a member since 1912, has been elected chairman of the commission.

CLYDE L. SEAVEY, a member of the Railroad Commission of California since 1924, has been elected president of that body.

THE PACIFIC RAILWAY CLUB will hold its next meeting on Thursday evening, February 13, at Hotel Oakland, Oakland, Cal. The discussion will be on car handling and car distribution.

FRED P. WOODRUFF of Knoxville, Iowa, has been elected chairman of the Iowa Board of Railroad Commissioners, succeeding B. M. Richardson of Cedar Rapids, who remains as a member of the board.

THE CAR FOREMAN'S ASSOCIATION OF ST. LOUIS will hold its next meeting at the American Hotel Annex, St. Louis, on Tuesday evening, February 11. The discussion will be on the changes in the Interchange Rules.

THE ST. LOUIS RAILWAY CLUB will hold its next meeting on February 14, at the Statler Hotel, St. Louis. The chief speaker will be Colonel F. G. Jonah, chief engineer of the St. Louis-San Francisco. This meeting comes on the evening of St. Valentine's day and it will be called a Valentine party.

THE BOARD OF DIRECTORS of the Chamber of Commerce of the United States has authorized the appointment of a special committee to study inland water transportation. The study contemplates the development of standards or tests which should govern in determining the advisability of proposed waterway improvements and priority among such proposed works, and also the determination of practicable means for hastening the placing of government barge lines on a basis of private ownership and operation.

THE EXECUTIVE COMMITTEE of the National Business Survey Conference at a meeting held on January 23, in Washington, decided that the situation had become so far normal that no unusual methods need be considered for the stimulation of business beyond the policies of progress which ordinarily mark American industry.

Northern Pacific Land Grants

The Department of Justice is planning to submit to the federal courts the differences between the government and the Northern Pacific involving the adjustment of the company's land grants, which have been a matter of controversy for many years. Provision for such a disposition of the matter was made in a resolution passed by Congress at the last session, and the Attorney General has now appointed two special assistants to handle the litigation.

Six-day Week on the Pennsylvania

An agreement has been reached between the Western region of the Pennsylvania and its regional committee of shop-crafts employees whereby 3,000 mechanical department workers who have heretofore worked seven days a week will be placed on a six-day week, beginning on February 1. This arrangement adds the shops workers to the signalmen, telegraphers, and clerical and station forces on the Pennsylvania who have been placed on a six-day basis during the past few years.

Procurement Officers Wanted for U. S. Army Reserve

The War Department has announced that there are a number of vacancies for officers in the Procurement Divisions of the Engineers Corps and Ordinance Department of the United States Army Reserve. Many types of men and many qualifications are needed in the procurement service in time of emergency, including accountants, financial experts, inspectors, lawyers, liaison officers, personnel experts, production specialists, purchasing officers, research specialists, statisticians and traffic experts. The ranks range from second lieutenant to colonel during peace time with promotions as a probability in the event of a major emergency.

Railroad officers and supervisors who are interested and feel themselves qualified for service in the Procurement Division as commissioned officers, are requested to write to the chief of the branch of service in which they are interested. Address your letter thus: War Department, Office of the Chief Engineers, Washington, D. C.

Correction

In the article "The Illinois Central in 1929" which appeared in the *Railway Age* of January 25, page 251, the figures given in Table III are incorrect in that the printer pointed off two places for cents in figures which should have indicated dollars only. The table in its correct form appears below:

Table III.—Illinois Central System—Revenues, Expenses and Dividends

	Miles Operated	Freight Revenues	Passenger Revenues	Total Operating Revenues	Operating Expenses	Net Railway Operating Income	Non-Operating Income	Net Income	Dividends Paid
(1) 1920	4,799	101,360,640	26,630,148	121,804,579	121,874,327	18,522,085	7,219,881	13,571,122	7,650,720
1921	4,799	107,092,090	24,740,350	141,127,065	116,852,333	17,542,227	5,039,238	9,700,794	7,650,720
1922	4,784	119,849,020	24,264,250	154,860,387	119,129,269	25,121,127	4,104,464	16,089,675	8,099,842
1923	4,840	127,081,545	27,042,400	165,626,981	132,429,231	22,906,243	6,816,739	15,485,073	8,308,642
(2) 1924	6,218	126,785,948	28,698,324	173,838,131	134,024,920	28,102,073	3,577,826	16,248,557	9,153,026
1925	6,243	131,613,651	27,777,205	178,169,625	135,382,526	29,926,943	3,623,813	17,551,742	9,774,292
(3) 1926	6,435	139,054,456	27,925,991	186,632,489	143,119,861	30,194,550	4,540,606	17,150,398	10,547,710
1927	6,601	142,870,179	27,117,259	182,967,560	141,921,643	27,176,951	4,372,979	12,131,871	10,575,466
1928	6,698	141,688,688	25,032,712	179,605,452	137,479,786	28,917,199	3,516,034	13,250,479	10,601,019

(1) Illinois Central Railroad only 1920-23.
(2) Includes Y. & M. V. 1924 and thereafter.
(3) Includes A. & V. and V. S. & P. 1926 and thereafter.

New York Traffic Club Annual Dinner

The Traffic Club of New York on the evening of February 21 will hold its annual dinner at the Hotel Commodore, New York. The club is nearing its twenty-fourth birthday, in which connection a summary of the purposes of the club and its development has been issued.

The purpose of the club, it is stated, is primarily to facilitate contact between traffic representatives of transportation companies and industrial traffic men. It is pointed out that there are in the New York area hundreds of traffic men representing companies a thousand miles or more removed from the metropolis and that the provision of a central meeting place for them greatly facilitates their task.

The club maintains a dining room, parlors and a library at its headquarters in the Park Central Hotel, New York, and, as an educational feature, conducts monthly forums on a wide variety of traffic subjects. At the recent election of officers for the year 1930, C. A. Swope, eastern freight agent of the Louisville & Nashville, who had been secretary of the club since the first year of its existence, was elected president.

Milwaukee Opens New Car Shop

On January 25, the Chicago, Milwaukee, St. Paul & Pacific opened, with appropriate exercises, at Milwaukee, Wis., one of the largest and most complete freight car shops in the country. This shop, 196 ft. wide and slightly over 1,000 ft. long, is of steel and glass construction, fully provided with crane facilities, machine tools and modern spray-painting equipment, and cost in excess of $1,000,000. Some idea of the magnitude of the building may be obtained from the fact that approximately 6,000 people were seated or standing before the speakers' platform, erected in one end of the building, at the opening of the dedication exercises.

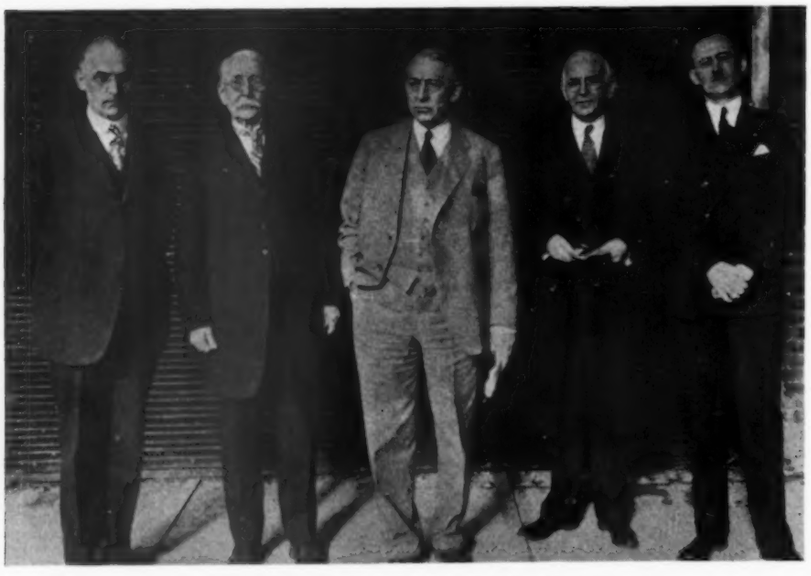
Among the speakers and guests of honor were the Mayor of Milwaukee, who made a brief address, followed by H. A. Scrandrett, president of the Chicago, Milwaukee, St. Paul & Pacific, and J. T. Gillick, vice-president. Throughout the dedication exercises, emphasis was placed on safety and, following some general remarks on this subject, M. J. Flanigan, assistant to the general managers, in charge of safety, introduced the principal speaker of the day, W. H. Jones, director of safety and first aid, of the Canadian National. The dedication exercises were in charge of K. F. Nystrom, superintendent of the car department of the Milwaukee, with the aid of J. A. Deppe, assistant superintendent of the car department, and G. Reichart, superintendent of the new freight car shop. A feature of interest was the appeal for loyalty and co-operation between railroad and employees, made by J. J. Hennessy, assistant superintendent of the car department, and formerly for many years master car builder of the road.

P. R. R. Transportation Club Annual Dinner

The Thirty-first annual dinner of the Transportation Club of the Pennsylvania Railroad was held on January 25 at the Benjamin Franklin Hotel, Philadelphia. More than 1,000 members and guests attended. This club, which is an organization of Pennsylvania transportation department employees, had its inception in 1899 when a few Car Service department employees gathered for the first dinner.

The principal speakers were U. S. Senator Henry J. Allen of Kansas, and E. H. H. Simmons, president of the N. Y. Stock Exchange. W. W. Atterbury, president of the Pennsylvania, Elisha Lee, vice-president, and M. W. Clement, vice-president in charge of operation, also made brief addresses. Samuel H. Walker, special representative of the Pennsylvania, and chairman of the executive committee of the club, acted as toastmaster, after being introduced by T. George Harper, president of the club. The addresses of the speakers were broadcast by radio.

Senator Allen directed his remarks mainly to the expansion of business in foreign countries, and spoke specifically on the question of independence for the Philippine Islands. Mr. Simmons' address was an outline of what he regarded to be the principal factors responsible for the stock market break of last autumn. The Pennsylvania officers who spoke congratulated the men for their part in the satisfactory performances of the railroad during the past year, and urged their co-operation in the continuance of these improvements.



Group of Chicago, Milwaukee, St. Paul & Pacific Officers present at the Dedication of New Freight Car Shop at Milwaukee.

(Left to right)—K. F. Nystrom, superintendent of the car department; J. J. Hennessy, past president, Master Car Builders' Association, and for many years master car builder of the Milwaukee; H. A. Scandrett, president; J. T. Gillick, vice-president in charge of operation, and J. A. Deppe, assistant superintendent of the car department.

Moffat Tunnel Bonds

The Colorado Supreme court, on January 20, handed down an opinion reversing the decision of Judge Robert G. Smith of the federal district court at Denver, Colo., who ruled on October 6, 1928, that the Moffat Tunnel Commission was within its rights in issuing supplemental bonds to complete the construction of the Moffat tunnel. The supreme court in ordering a new trial issued instructions that such holders of the supplemental issue of $8,375,000 of bonds as may be in Colorado should be made defendents in the suit, which was originally instituted by the Denver Land Company on June 23, 1928, to restrain the tunnel commission from levying a special property tax to pay interest on the bonds.

The state supreme court also instructed the district court to issue an injunction restraining the Moffat tunnel improvement district and the tunnel commission from disposing of any funds realized from the special assessment until the case is finally determined. The bondholders were necessary and indispensable parties to the suit and without their presence the trial court had no jurisdiction whatever to proceed, the court said.

On January 24 Judge Robert E. Lewis in the United States district court granted the Moffat Tunnel Commission and the Denver & Salt Lake an appeal to the circuit court of appeals from the decision of Judge J. Foster Symes of September 20, 1929, in which he held the lease under which the railroad uses the tunnel to be valid and binding.

New Equipment on Order

The railroads on January 1 this year had 34,581 freight cars on order, or more than in any January since January 1, 1926, the Car Service Division of the American Railway Association has announced. This was an increase of 21,545 cars above the number on order on January 1, 1929, and

21,524 cars above the same day in 1928. Also 13,339 cars above January 1, 1927, but a reduction of 6,213 cars under January 1, 1926. Of the total 19,337 were box cars, an increase of 12,112 compared with the same date last year. Coal cars numbered 12,549, an increase of 8,947 compared with the number of such cars on order on January 1, 1929. Refrigerator cars on order totaled 1,002; stock cars, 223; flat cars, 1,370 and other miscellaneous freight cars, 100.

Locomotives on order on January 1 this year numbered 431, compared with 147 on the same day in 1929 and 93 in 1928. On January 1, 1927, the railroads had 329 on order, and on January 1, 1926, there were 471.

New freight cars placed in service in 1929, according to complete reports for the year just filed by the railroads with the Car Service Division, totaled 84,894; of which there were: Box cars 41,466; coal, 32,246; flat, 4,310; refrigerator, 3,522, and stock cars, 2,749. Other classes of equipment installed in service during that period totaled 601.

New locomotives placed in service in 1929 totaled 762.

Freight cars or locomotives leased or otherwise acquired are not included in the above figures.

Hear Testimony on Proposed S. F. Lines in Southwest

Only favorable testimony was presented at the Interstate Commerce Commission hearing at Amarillo, Tex., January 22 to 25 on the applications of the Atchison, Topeka & Santa Fe for permission to construct 330 miles of new railroad in Colorado, New Mexico, Oklahoma and the Texas Panhandle. Stock raisers, grain growers and oil and gas producers were practically unanimous in their support of the two lines which would extend between Amarillo and Las Animas, Colo., 220 miles, and between Felt, Okla., and Colmor, N. M., 110 miles, and on January 24 Thomas F. Sullivan Commission examiner, excluded further testimony favorable to these two projects. Representatives of Springfield, Colo., and Lamar asked that the proposed line between Amarillo and Las Animas be moved eastward to pass through Springfield and intersect the Santa Fe main line at Lamar.

Opposition to the construction of the line between Spearman, Tex., and Dumas, a point on the proposed Amarillo-Las Animas line, 50 miles, came from the Chicago, Rock Island & Pacific, whose representatives pointed out that that particular portion of the Panhandle of Texas would be completely served by the present Rock Island Amarillo-Liberal line and the proposed Dalhart-Morse line. The new Santa Fe line would parallel the new Rock Island line between Morse and Dumas, it was stated. J. R. Hitchcock, general manager of the Western lines of the Santa Fe, pointed out that that railroad plans to use the Spearman-Dumas line as a link in its through freight lines in the Southwest with little regard to the traffic development possibilities along its route. Mr. Hitchcock also stated that it might be possible to construct a joint line with the Rock Island between Morse and Dumas. The four-day hearing was brought to a close on January 25.

Meetings and Conventions

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City. Next meeting, May 13-16, 1930, Stevens Hotel, Chicago. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, April, 1930. Daytona Beach, Fla.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, June 16-19, 1930, Minneapolis, Minn.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, Supt. Dining Car Service, Monon Route, Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Annual Convention, June 23-26, 1930, San Francisco, Cal.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C Borchert, 202 North Hamlin Ave., Chicago.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section.—J. C. Caviston, 30 Vesey St., New York.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, June 24-26, 1930, Antlers Hotel, Colorado Springs, Colo.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 16-19, 1930, Royal York Hotel, Toronto, Ont.

Division II.—Transportation.—G. W. Covert, 431 South Dearborn St., Chicago.

Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago. Next meeting, March 11-13, 1930, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 11-13, 1930, Palmer House, Chicago.

Electrical Section.—E. H. Fritch.

Signal Section.—H. S. Balliet, 30 Vesey St., New York. Next meeting, March 10-11, 1930, Stevens Hotel, Chicago.

Division V.—Mechanical.—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual convention, June 18-25, 1930, new Auditorium, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section.—V. R. Hawthorne, 431 South Dearborn St., Chicago, Next convention, 1930, Chicago. Exhibit by Supply Men's Association.

Division VI.—Purchases and Stores.—W. J. Farrel, 30 Vesey St., New York, N. Y. Annual convention, June 18-20, 1930, Convention Hall, Atlantic City.

Division VII.—Freight Claims.—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting, June 10-13, 1930, Olympic Hotel, Seattle, Wash.

Division VIII.—Motor Transport.—George M. Campbell, American Railway Association, 30 Vesey St., New York, N. Y.

Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, October, 1930, Louisville, Ky. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—E. L. Taylor, Asst. to Exec., Vice-Pres., N. Y., N. H. & H., New Haven, Conn. Annual meeting, June 18-20, Hotel Duluth, Duluth, Minn.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association, Division IV.—E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 11-13, 1930, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS ASSOCIATION.—Miss Page Nelson Price, Norfolk & Western Magazine, Roanoke, Va.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St., P. & P. R. R., 11402 Calumet Ave., Chicago. Exhibit by Supply Association of the American Railway Tool Foreman's Association.—Acting Secretary: H. W. Leighton, Harry W. Leighton Co., 565 W. Washington St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 228 N. LaSalle St., Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, May 21-23, 1930, Richmond, Va.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W., Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—J. W. Fogg, MacLean-Fogg Lock Nut Co., 2649 N. Kildar Ave., Chicago. Meets with International Railway General Foremen's Association.

BOILER MAKER'S SUPPLY MEN'S ASSOCIATION.—Frank C. Hasse, Oxweld R. R. Service Company, 230 N. Michigan Ave., Chicago. Meets with Master Boiler Makers' Association

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—I. B. Tanner, Joe E. Nelson & Sons, 3240 So. Michigan Ave., Chicago. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charon St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegmann, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, Broadview Hotel, East St. Louis, Ill.

CENTRAL RAILWAY CLUB.—E. F. Ryan (President), Buffalo, Rochester & Pittsburgh Ry., Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual meeting, September, 1930, Hotel Sherman, Chicago. Exhibit of International Railroad Master Blacksmith's Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—J. H. Jones, Crucible Steel Company of America, Pittsburgh, Pa.

INTERNATIONAL RAILWAY CONGRESS.—Madrid Spain, May 5-15, 1930.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700, La Salle Street Station, Chicago. Next meeting, May 6-9, 1930, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn. September 15-18, 1930.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—L. R. Fyle, Locomotive Firebox Co., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, New York Central, 29 Parkwood St., Albany, N. Y. Annual meeting, May 21-24, 1930, William Penn Hotel, Pittsburgh, Pa. Exhibit by Boiler Maker's Supply Men's Association.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Exhibit by Supply Men's Association.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy. M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: A. W. Smallen, C., M., St. P. & P., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.— E. Sumner (President), Asst. to Gen. Supt. M. P. Penna. R. R., Philadelphia, Pa. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Tuesday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—F. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual convention, April 30-May 2, 1930, Hotel Roosevelt, New Orleans.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1641 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association. Next meeting, September 16-18, 1930, Hotel Sherman, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meet semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Inc., Chicago. Meets with Master Car Builders' and Supervisors' Association.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O. Annual meeting, September 23-26, 1930, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

The House Committee on interstate and foreign commerce has begun work in executive session on the Parker bill for the regulation of passenger motor vehicle transportation.

The St. Louis Southwestern has improved its merchandise service between St. Louis, Mo., and Dallas, Tex., and Ft. Worth, so that merchandise loaded at St. Louis at the close of the day will be delivered on the morning of the second day following.

The New York Central has established sleeping car service between Chicago and Columbus, Ohio. Cars leave Chicago at 9 p.m. central time and arrive in Columbus at 7.15 a.m. eastern time; returning, leave Columbus at 12.15 a.m. eastern time and arrive in Chicago at 8 a.m. central time. The trains of this company now arrive at and depart from the Columbus Union Station.

The Interstate Commerce Commission has approved the continuance of the joint passenger-train service between the Twin Cities and the head of the Great Lakes by the Great Northern, Northern Pacific and Minneapolis, St. Paul & Sault Ste. Marie under a plan for a division of the earnings. The commission had previously approved the arrangement under an agreement which expired November 26, 1929, but which was succeeded by a similar new agreement of November 12, 1929.

The Canadian National, beginning March 5, will operate an agricultural lecture train in British Columbia in conjunction with the Dominion and Provincial departments of agriculture. The train, which will consist of a lecture car and two demonstration cars, will start from Kamloops, and proceed along the main line to Red Pass Junction and thence to Terrace. After returning to Kamloops, a trip will be made over the Okanagan branch to Kelowna. The demonstration cars will contain agricultural machinery and grain and seed displays.

Waterway Projects Under Consideration

Secretary of War Hurley has announced the appointment of three Army engineer officers to represent the United States in conference with Canadian engineers with reference to the St. Lawrence waterway project. The officers appointed are Col. Harley B. Ferguson, division engineer, South Atlantic division; Col. Edward M. Markham, division engineer, Great Lakes division; and Col. George B. Pillsbury, district engineer at Philadelphia. The appointment followed the receipt of a telegram from Ottawa inquiring whether the United States engineers would be prepared to meet the Canadian engineers at an early date. A joint board of engineers submitted its report in 1926 and the United States section of it has been regarded as no longer in existence.

The Board of Engineers for Rivers and Harbors has been in practically continuous session recently holding hearings and considering reports on various waterway projects, including the interim report of a special board appointed to conduct a survey of the upper Mississippi river, the Illinois waterway project and the project for a waterway from Lake Erie to the Ohio river.

P. R. R. Officer Heads T.A.T. Executive Committee

Daniel M. Sheaffer, chief of passenger transportation of the Pennsylvania, has been elected chairman of the executive committee of the Transcontinental Air Transport. J. L. Maddux, founder of the Maddux Air Lines, a subsidiary of the T. A. T., has been elected president, succeeding C. M. Keyes, who has become chairman of the board. Colonel Charles A. Lindbergh has been re-elected chairman of the technical committee. Colonel Paul Henderson has been re-elected executive vice-president, and W. J. Barry has been elected secretary and treasurer.

Barge Line Replies to S. W. Roads

The Inland Waterways Corporation has filed with the Interstate Commerce Commission a reply to the arguments of the southwestern railroads in its petition for a modification of the commission's orders in *Ex Parte* 96 as to the method for ascertaining differential rail and barge rates to points in the Southwest so as to establish a 20 per cent differential under the all-rail rates. It asks the commission to require the withdrawal of the railroad answer on the ground that it "discloses a lack of regard for the legislation contained in the act of May 29, 1928," the Denison act. It says that the fact that the establishment of the proposed rates might deprive the rail carriers of traffic should have no weight with the commission. The answer of the barge line declares that the provisions of the law against short-hauling are not applicable when one of the connections of the rail carrier is a water line and that the character of its service justifies a differential under the corresponding rates for all-rail service. It is also asserted that many rates such as are proposed have long been in effect to points in the Southwest by the rail and barge lines and that the railroads themselves often join in rates on routes just as circuitous as those proposed by the barge line. The commission's order in the barge line case, it says, requires barge-rail rates where the circuity does not exceed 40 per cent and rail-barge-rail rates where it does not exceed 33½ per cent and it asserts that the circuity of the routes proposed in the petition would not materially exceed those percentages.

The barge line answer says there is no basis except conjecture for the railroad statement that service over its line between St. Louis and New Orleans is expensive as compared with the cost of rail service.

Equipment and Supplies

Locomotives

THE AMERICAN STEEL & WIRE COMPANY has ordered one 70-ton 400-hp. oil-electric locomotive from the Westinghouse Electric & Manufacturing Company. The locomotive will be used in switching service at the Newburgh Steel Works, Cleveland, Ohio.

VanSweringen Lines Place Orders for $11,400,000 Worth of Equipment

The Chesapeake & Ohio, Pere Marquette and Hocking Valley have placed orders for 120 new locomotives and 55 extra large tenders as follows:

Number	Type	Road	Builder
20	2-10-4	Chesapeake & Ohio	Lima
20	2-10-4	Hocking Valley	Lima
15	Extra Tenders	Pere Marquette	Lima
50	Switching	Chesapeake & Ohio	American
15	Switching	Pere Marquette	American
15	Switching	Hocking Valley	American
40	Extra Tenders	Chesapeake & Ohio	American

The road locomotives will have 105,000 lb. tractive force with booster and they will have 20 per cent more capacity than the Erie Series 3300 locomotives. The cost of the orders placed with the Lima Locomotive Works will be $5,900,000, and the cost of the orders placed with the American Locomotive Company will be $5,500,000. Inquiries for 130 locomotives and 55 extra large tenders were reported in the *Railway Age* of January 4.

Freight Cars

THE MISSOURI PACIFIC is inquiring for 20 steel underframe drovers caboose cars.

THE ALUMINUM COMPANY OF AMERICA is inquiring for 25 hopper cars of 50 tons' capacity.

THE GREEN BAY & WESTERN is inquiring for 125 box cars of 40 tons' capacity.

THE PENNSYLVANIA TANK LINE, Sharon, Pa., has ordered 600 tank cars of 10,000 gal. capacity from the Petroleum Iron Works.

THE UNION GAS & ELECTRIC COMPANY, St. Louis, Mo., has ordered one well car of 100 tons' capacity from the St. Louis Car Company.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION has ordered 210 flat cars from the Magor Car Corporation.

THE CANTON TANK CAR COMPANY, Straus building, Chicago, has ordered 1000 tank cars from the American Car & Foundry Company.

THE MANILA RAILROAD has ordered six coal or ballast cars of 40 tons' capacity from the American Car & Foundry Company.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA are inquiring for 25 single sheathed box cars, 35 steel frame stock cars and 25 steel frame flat cars, all to be of 25 tons' capacity.

THE SEABOARD AIR LINE is inquiring for 2000 box cars of 40 and 50 tons' capacity. The company had previously asked for 1000 cars of 40 tons' capacity as reported in the *Railway Age* of January 11.

THE BANGOR & AROOSTOOK has ordered 200 steel underframes and superstructures for box cars from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 11.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 2,300 freight cars as follows:

No.	Type	Capacity Tons	Builder
500	Gondola	70	Bettendorf Company
500	Gondola	70	Pressed Steel
500	Box	50	American Car & Foundry
200	Box	50	Pacific Car & Foundry
300	Flat	50	Pullman
300	Flat	50	Ryan Car

Inquiries for this equipment were reported in the *Railway Age* of December 7, 21 and January 18.

Passenger Cars

THE PENNSYLVANIA has ordered five combination passenger and baggage gas-electric rail motor cars from the J. G. Brill Company.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered from the Osgood Bradley Car Company 33 multiple-unit car bodies mounted on trucks as follows: 12 multiple-unit motor cars, 19 multiple-unit trailer cars, 2 multiple-unit combination passenger-baggage trailer cars. Bids are now being asked for the electrical equipment of these cars.

Iron and Steel

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 400 tons of structural steel for bridgework in Oklahoma from the American Bridge Company.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 230 tons of structural steel for a bridge at Caffeen, Ill., from the American Bridge Company.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered 8,700 tons of rail for its 1930 requirements from the Bethlehem Steel Company.

Machinery and Tools

THE MISSOURI-KANSAS-TEXAS has ordered from Manning, Maxwell & Moore, Inc., one Warner & Swasey Company's motor driven hollow hexagon turret lathe, with bar and chucking equipment, for its Parsons, Kan., shops.

Supply Trade

D. S. Kerr has been placed in charge of the newly-established Chattanooga, Tenn., office of the **Allis-Chalmers Mfg. Co.** This office is being operated as a branch of the Atlantic district office.

Layne & Bowler, Inc., Memphis, Tenn., has established two subsidiaries, the **Layne-Northwest Company**, Milwaukee, Wis., and the **Layne-Canadian Water Supply Co., Ltd.,** Toronto, Ont., to handle its deep well pumps.

The Kring-Becker Engineering Company, Cincinnati, Ohio, has been appointed representative in the Cincinnati and Louisville districts for **The Pennsylvania Pump & Compressor Company,** Easton, Pa.

James Cleary has been appointed general sales manager of the **Combustion Engineering Corporation,** New York. Mr. Cleary joined the organization in 1921 and has served successively as district manager at Philadelphia and Detroit, assistant general sales manager, and western manager with office at Chicago.

James F. Armstrong, superintendent of pneumatic foundation work of the Arthur McMullen Company during the past 13 years, has been elected a vice-president and a director of **Senior & Palmer, Inc.,** engineers and contractors, 50 Church street, New York City. Mr. Armstrong will have charge of the pneumatic foundation work branch of the new company.

The Rockbestos Products Corporation, New Haven, Conn., has opened a district sales office in the Railway Exchange Building, St. Louis, Mo. **F. W. Allen** who has been connected with the Chicago sales office is in charge of the St. Louis office and **E. H. Clark** has joined the selling organization of the corporation at the Chicago district office.

T. H. Driscoll of the Chicago office of the **Gardner-Denver Company,** Quincy, Ill., has been transferred to the Los Angeles branch. **Fred V. Moore** who has been a representative in the eastern states, has been transferred to Phoenix, Ariz., while **R. J. Featherstone** has been assigned to the New York office. **Ian Duncan** of Edinburgh, Scotland, after a preliminary training in the American plants of the company, will be assigned to the London office of Gardner-Denver Company, Ltd.

At a recent meeting of the board of directors of the **Union Carbide Company** and the **Electro Metallurgical Company,** both units of the **Union Carbide & Carbon Corporation,** New York, **Benjamin O'Shea,** formerly president, was elected chairman of the board of each company; **Fred H. Haggerson,**

former vice-president of the two companies, was elected president to succeed Mr. O'Shea; and **F. P. Gormely** was elected vice-president and general manager of both companies.

George G. Crawford, for the past 22 years president of the Tennessee Coal Iron & Railroad Company and previous to that associated with the Carnegie Steel Company and the National Tube Company, has been elected president of the **Jones & Laughlin Steel Corporation,** a member of its board of directors and also a member of its executive committee, with headquarters at Pittsburgh, Pa.; **Herbert C. Ryding,** vice-president in charge of operations since 1917 of the **Tennessee Coal Iron & Railroad Company,** has been elected president of that company with headquarters at Birmingham, Ala., to succeed Mr. Crawford.

Final arrangements were made at a meeting, held on January 27, at Cleveland, Ohio, for the merger of the **Pittsburgh Forgings Company,** Coraopolis, Pa., and the **Greenville Steel Car Company,** Greenville, Pa. The Pittsburgh Forgings Company will acquire all the common stock of the Greenville Steel Car Company which has assets of more than $1,000,000. The transaction involves the issuance of 20,000 shares more of Pittsburgh Forgings common stock bringing the total to 220,000 shares. The Greenville Steel Car Company reported net earnings of 1929 of $220,245 after all charges and federal taxes, equivalent after the payment of $54,883 preferred dividends to 75 cents a share. The Pittsburgh Forgings Company reported net earnings of $475,818 or $2.38 a share on 200,000 shares.

Joseph T. Ryerson & Son, Inc., Chicago, has completed increased facilities for storing and dispatching its products at 1600 East Euclid avenue, Detroit, Mich. The new unit is 120 ft. by 300 ft. and includes six bays, one of which, a transfer bay, has facilities for the inside loading of freight cars. Five cranes move material from all parts of the building to the transfer bay where another crane loads it onto the cars. Truck loading facilities are provided by a driveway through the center of the building. This driveway is 20 ft. wide and permits the simultaneous loading of five trucks, one under each of the five cranes. Trucks are also loaded under the crane in the transfer bay. The floor of the building is on the same level as the floor of the railroad cars, thereby forming a dock which simplifies the moving of material to and from the cars.

The **Stanley Electric Tool Company,** New Britain, Conn., has been organized as a subsidiary of the Stanley Works to manufacture and sell electrically operated hand tools. The drills, screw drivers, bench grinders and aerial grinders are those developed and manufactured by the Stanley Rule & Level Plant. The saws were formerly manufactured by the Crowe Safety Saw Company, Inc. Cincinnati, Ohio, while the hammers were formerly manufactured by the Ajax Hammer Corporation, New York. An electrically-operated hand tool for the outside and inside cutting of sheet metal and sheet material was formerly manufactured by the Unishear Company, New York. The officers of the Stanley Electric Tool Company are as follows: **L. M. Knouse,** president; **Cedric Powers,** vice-president in charge of production; **H. W. Blackman,** secretary; **L. W. Young,** treasurer, and **R. W. Chamberlain,** sales manager.

New Executives for Superheater Company

Frederic Alan Schaff, vice-president of the Superheater Company, has been elected president and George L. Bourne, retiring as president, has been elected chairman of the board of directors. Mr. Schaff's headquarters will remain at the principal office of the company in New York. Mr. Schaff was born at Nelsonville, Ohio, on May 24, 1884, and was graduated from Purdue University in 1907. After his graduation Mr. Schaff spent several years in the mechanical department of the Boston & Albany and the New York Central Lines. Following a period of several year's residence in Texas, in charge of business interests there, he became associated with the Superheater Company, in its service department, in 1913. He was elected vice-president in 1915, in which capacity he has served until his recent election as president of the same company.

Frederick Alan Schaff

Obituary

E. L. Whittemore, chairman of the board of the **National Malleable & Steel Castings Company,** Cleveland, Ohio, died on January 29 at his home in Cleveland.

Clarence W. Hodges, general purchasing agent of the Worthington Pump & Machinery Corporation died at the Paterson, N. J., hospital on January 17, following an operation. Mr. Hodges was born at Randolph, Vt., on May 15, 1876, and was graduated from Williams College with the class of 1900. For some years he was employed by the American Locomotive Company as purchasing agent, and since 1918 he had been employed in the same capacity by the Worthington Corporation.

Francis Cole Pratt, former vice-president and chairman of the manufacturing committee of the General Electric Company, died on January 26, in New York City after an illness of six weeks. He was born in 1867 at Hartford, Conn. and was graduated from the Sheffield Scientific School of Yale University with the degree of Ph. B. in mechanical engineering in 1888. After graduation he was associated with the Pratt & Whitney Company continuing with that company until he became vice-president. Mr. Pratt joined the General Electric Company in 1906 as assistant to E. W. Rice, in charge of manufacturing and engineering. He was made assistant to the president in 1913 and was elected vice-president in 1919. As vice-president he at first had charge of engineering and later of both engineering and manufacturing. He retired in 1927.

Trade Publications

VERTICAL CENTRIFUGAL PUMPS.—Layne & Bowler, Inc., Memphis, Tenn., has issued a bulletin illustrating the construction and operation of deep well pumps. The bulletin includes a typical test performance curve of a type "K" pump for a 10-in. well and a pictorial representation of a centrifugal pump showing and explaining all the parts.

MODERN REFRACTORY PRACTICE.—This is the title of an attractive catalogue of 178 pages issued by the Harbison-Walker Refractories Company, Pittsburgh, Pa. There are 13 chapters in the catalogue, the first five of which describes fireclay, high-alumina, silica, magnesite and chrome refractories. Special clays, high-temperature cements and Duro acid-proof brick and tile are then discussed. Following these chapters are brief reviews of the application of Harbison-Walker products in a number of important types of industrial furnaces; tables for use in estimating the quantities of brick required for circular linings, roofs and arches; formulae for calculating brickwork; general information, and a glossary of terms commonly used in the refractories industry. The material is presented in a simple, non-technical manner.

BEGINNING ON THURSDAY, JANUARY 23, according to an announcement made jointly by George Le Boutillier, vice-president of the Pennsylvania, and G. H. Foster, vice-president of the Lehigh Valley, freight train service over the newly completed two-track steel lift bridge spanning Newark Bay was inaugurated by the Pennsylvania and Lehigh Valley, and operations over the old bridge, adjoining the new structure, were discontinued.

Construction

ATLANTIC COAST LINE.—The Interstate Commerce Commission has authorized this company to construct a line from Medulla, Fla., southeasterly to Ridgewood 7 miles; estimated cost, $125,000. Authority for the construction of the new line was asked in December, and reported in the *Railway Age* of Dec. 21, 1929.

CANADIAN NATIONAL.—Plans are being prepared, in co-operation with the city authorities, for the construction of a new passenger station and office building, to cost between $700,000 and $1,000,000, and for the elimination of six grade crossings at a probable cost of $3,750,000, at London, Ont.

CANADIAN PACIFIC.—This company will apply to the Canadian Parliament at its next session for an act authorizing it to construct a number of short branch lines, as follows: From a point on the Taber subdivision at or near Tempest, Alta., southeasterly; from a point on the Swift Current Southeasterly branch at or near Dunelm, Sask., in a general southwesterly and westerly direction; from a point on the Pheasant Hills branch at or near Duval, Sask., easterly; from a point in or near township 46 or 47 in a general easterly and northeasterly direction to a point at or near Shellbrook, Sask., and from a point on the Ontario and Quebec east of Vaudreuil station, Que., southeasterly to a point at or near Windmill Point, in the parish of Ste. Jeanne de L'Ile Perrot, Que. In the same act the Dominion Parliament will also be asked to provide for financing the construction of the above lines by authorizing security issues in an amount not to exceed $50,000 per mile.

CHICAGO & NORTH WESTERN.—This company has applied to the Interstate Commerce Commission for authority to construct an extension of its Gogebic line in Gogebic county, Mich., 5.62 miles.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved as not excessive bids submitted for the elimination of various grade crossings on this company's lines as follows: By the Walsh Construction Company, Syracuse, N. Y., for the elimination of Peru and Jack Reef crossings near Memphis, N. Y., $104,455; by J. E. Lowe & Sons, Schenectady, N. Y., for the removal of Hardins crossing of the New York Central and the Fonda, Johnstown & Gloversville at Glenville, Schenectady, N. Y., $120,859; by Dempsey & Ballard, Syracuse, N. Y., for the elimination of Bloomers crossing, Carmel, N. Y., $8,448, and by the Utica Construction Company, Inc., for the construction of a new street in connection with the elimination of the Hutchinson avenue and Turner street crossings of the West Shore, Utica, N. Y., $41,732. The railroad has been directed to award the necessary contracts. The commission has also approved estimates of cost totaling $115,700 for the elimination of the Poland-Trenton state highway grade crossing at Poland, N. Y., and $143,900 for the reconstruction of the bridge carrying Broadway over the New York Central tracks at Depew, N. Y., and has further sanctioned plans for the installation of automatic flashing highway signals at the Main and North Front street crossings in New Paltz, N. Y.

NORFOLK & WESTERN.—The Interstate Commerce Commission has authorized this company to extend its Jacob's Fork branch and its Dry Fork branch from a point near Newhall, W. Va., northeasterly 8 miles; estimated cost, $1,180,000.

PERE MARQUTTE.—Directors of this company have authorized the expenditure of $6,110,000 for new construction as a part of the budget for 1930. Included in the budget are the construction of grade separation structures at Michigan and Miller avenues, Detroit, Mich., and a new ferry slip in the same city. At Ludington, Mich., it is planned to construct a new ferry slip, a berthing dock and accompanying trackage facilities, with new 80-ft. aprons at the north and south ferry slips, and a new brick passenger station. At Port Huron, Mich., it is planned to construct a new freight station and a new lift bridge over the Black river and to make improvements to the enginehouse, including the extension of several stalls. A new passenger station will be constructed at Bay View, Mich.

PORTLAND TERMINAL COMPANY.—This company, a subsidiary of the Maine Central, has awarded to the Mead-Morrison Manufacturing Company a contract for the erection of two coal handling towers at Turners Island, South Portland, Me. A contract has also been let to the Merritt, Chapman & Scott Corporation, of New York City, for 50 per cent of the work involved in a general program of wharf and warehouse construction at Portland and South Portland, Me. The entire program of port and terminal development, including the contracts mentioned above, involves an expenditure of approximately $2,000,000.

ST. LOUIS-SAN FRANCISCO.—A contract for the construction of a viaduct over the tracks of this company at Cincinnati avenue, Tulsa, Okla., has been let to the Standard Paving Company, Tulsa, at a cost of $144,600, which will be borne jointly by the city and the railroad. It was reported in the *Railway Age* of January 22 that bids for the work had been opened.

TEXAS & PACIFIC.—A contract has been awarded to J. L. Vilbig, Dallas, Tex., for the construction of a highway subway under the tracks of this company at Good street, Dallas. The estimated cost of the construction, $225,000, will be shared by the city and the railroad.

Financial

ATLANTIC COAST LINE.—*Lease.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Charleston & Western Carolina by lease for 99 years and by acquisition of its stock from the Atlantic Coast Line Company. The line has long been operated practically as part of the A. C. L.

BALTIMORE & OHIO.—*Bonds.*—Subject to authorization of the Interstate Commerce Commission, this company will offer to its preferred and common stockholders of record February 3, rights to subscribe at 95 to $63,031,000 of a new issue of 4½ per cent convertible bonds due in 1960 to the extent of 20 per cent of their stock holdings. The issue is to be underwritten by Kuhn, Loeb & Co., Speyer & Co., and the National City Company.

BALTIMORE & OHIO.—*Proposed Acquisition of Buffalo & Susquehanna.*—Testimony regarding the plan of this company for a new shorter route between New York and Chicago was given by Daniel Willard, president, and other officers at a hearing on January 27 before C. V. Burnside, assistant director of the Bureau of Finance of the Interstate Commerce Commission, on this company's application for authority to acquire control of the Buffalo & Susquehanna by purchase of its stock. If the B. & O. is permitted to acquire control of the Buffalo, Rochester & Pittsburgh, in another proceeding, Mr. Willard said, it would then own all of the proposed new line as far east as Sinemahoning, Pa., and from that point to a connection with the Reading at Williamsport, Pa., about 75 miles, it proposes to construct its own line, at an estimated cost of $15,000,000, unless it is possible to reach an agreement with the Pennsylvania or New York Central for trackage over a portion of their lines. Such a line, he said, would be about 900 miles between Chicago and New York, or 83 miles shorter than the present line via Baltimore and Philadelphia, with a summit 700 feet lower than the present line, and would take a substantial part of the company's through traffic out of the Pittsburgh district and relieve the present line through Pittsburgh and Baltimore. He pointed out that both the B. R. & P. and the B. & S. are allocated to the B. & O. in the consolidation plan and said that in these circumstances it would seem clearly in the public interest, as well as in the interest of both companies and of the territory served by them, to grant the application. George M. Shriver, senior vice-president, said that the plan involves the expenditure of $16,700,000 for the stock of the B. R. & P., in addition to the assumption of $37,500,000 of funded debt, and $6,300,000 for the stock of the B. & S., in addition to $4,000,000

of bonds, as well as the cost of the new line, but that this would accomplish a more effective and economical line giving practically a single-line haul from the entire Reading-Central of New Jersey territory to Buffalo, Rochester and points on the B. & O. west of Butler. In response to an inquiry from Mr. Burnside he said that the B. & O. now owns something over 34 per cent of the stock of the Reading and is interested in extending its interests. The Delaware & Hudson had intervened in opposition to the application but presented no witnesses.

BEAVER, MEADE & ENGLEWOOD.—*Sale Falls Through.*—The owners of this company have decided, it is announced, not to sell their railroad to the Missouri-Kansas-Texas under conditions recently authorized by the Interstate Commerce Commission.

CANADIAN NATIONAL.—*Bonds.*—A syndicate headed by Dillon, Read & Co. and composed of nine other American and Canadian banking houses is offering $18,000,000 of this company's 40-year 5 per cent bonds, guaranteed by the Dominion of Canada, at 99.5. The proceeds of the issue are to be used to retire a similar amount of securities of this company which mature on February 15.

CHESAPEAKE & OHIO.—*Acquisition of Chesapeake & Hocking.*—The Interstate Commerce Commission has authorized this company to acquire the Chesapeake & Hocking which it controls by stock ownership and lease and which extends from a connection with the C. & O. at Gregg, Ohio, to a connection with the Hocking Valley at Valley Crossing, 63 miles. The consideration for the transfer of the properties will be a surrender by the C. & O. of its 148,070 shares of stock of the Hocking company.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trust.*—Halsey, Stuart & Co. is offering $2,115,000 of 4½ per cent equipment trust certificates, series K, of this company, maturing in installments from 1930 to 1944 priced to yield 4.80 per cent.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $2,115,000 of 4½ per cent equipment trust certificates, to be sold to Halsey, Stuart & Co., Inc., the highest bidder, at 97.66.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Engineering Fees:*—The Interstate Commerce Commission has authorized the Chicago, Milwaukee & St. Paul, the predecessor company which operated this property, to pay from funds received by it from an assessment on the stockholders, not exceeding $107,166 for the services of engineering experts who assisted it in planning the reorganization.

CHICAGO, SPRINGFIELD & ST. LOUIS.—*Receivership.*—Elmer Nafziger, an attorney at Springfield, Ill., was appointed receiver for this railroad by Federal Judge Louis Fitzhenry at Springfield on January 23. The receivership was requested by attorneys for J. T. Kingsley, Pittsburgh, Pa., formerly assistant general freight agent of the road, who claims a debt of $5,300 of which $3,391 represents cash advanced for salaries.

KENTUCKY & INDIANA TERMINAL.—*Equipment Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue to the Lima Locomotive Works $298,000 of 6 per cent equipment notes.

LOUISIANA RAILWAY & NAVIGATION OF TEXAS.—*Trackage Rights.*—The Interstate Commerce Commission has authorized this company to abandon operation under trackage rights over the Texas & Pacific between the Louisiana-Texas state line near Waskon, Tex., and Shreveport, La., 22.5 miles; and in lieu thereof to operate under trackage rights between these points over the Vicksburg, Shreveport & Pacific (leased by the Yazoo & Mississippi Valley), 19.5 miles.

LOUISVILLE & NASHVILLE.—*Lease of South East & St. Louis.*—The Interstate Commerce Commission has authorized this company to lease the South East & St. Louis, which it controls by the ownership of its entire capital stock and by a lease which expired on January 27. The S. E. & St. L. owns a line of railroad extending from Evansville, Ind., to E. St. Louis, Ill., with other branches and a total mileage of 207.7, forming a part of the Louisville & Nashville through line to St. Louis. The lease will extend over a period of 50 years and the rental will be sufficient to cover fixed charges, taxes (including income taxes) and the lessor's corporate expenses.

MINERAL POINT & NORTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its line extending from Highland, Iowa, to Highland Junction, 26 miles, and its operation under trackage rights over the Chicago, Milwaukee, St. Paul & Pacific from Highland Junction to Mineral Point, four miles.

NORFOLK & WESTERN.—*Dividend Increase.*—The directors of this company have declared a quarterly dividend of $2.50 on common stock of the company, thereby raising the rate from $8 per share per annum to $10. Earnings per common share in 1929 totaled $29.05.

PENNSYLVANIA.—*Bonds.*—The Pennsylvania, Ohio & Detroit has applied to the Interstate Commerce Commission for authority to issue and deliver to the Pennsylvania, in settlement of indebtedness for additions and betterments, $5,067,000 of first and refunding mortgage 4½ per cent bonds.

PENNSYLVANIA.—*Lease of West Jersey & Seashore.*—The directors of this company and those of the West Jersey line will recommend a lease of the latter property to the Pennsylvania, the proposed rental to cover fixed charges, taxes and 6 per cent on the stock.

SABINE BASIN. — *Incorporation.*—This company has been chartered in Texas by the Missouri Pacific and the Southern Pacific to acquire and operate the Eastern Texas Electric, an interurban line extending between Beaumont, Tex., and Port Arthur, with a mileage of 25. It is planned to convert the line for steam operation. H. R. Safford, vice-president of the Missouri Pacific at Houston, Tex., has been elected president of the new company. The Eastern Texas Electric has been a subsidiary of Stone & Webster, Inc.

ST. LOUIS-SAN FRANCISCO.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its line between Brownwood, Mo., and Aquilla, 10 miles, and its line from Bloomfield to Campbell, 34.8 miles.

SEWELL VALLEY.—*Joint Control by C. & O. and N. Y. C.*—The Interstate Commerce Commission has authorized the New York Central to control jointly with the Chesapeake & Ohio the Sewell Valley, the Loop & Lookout and the Greenbrier & Eastern by purchase from the C. & O. of one-half the capital stock of these companies. The New York Central has also been authorized to assume obligation and liability jointly with the C. & O. in respect of $300,000 of first mortgage 5 per cent bonds of the Sewell Valley.

TEXAS-MEXICAN. — *Operation* — The Interstate Commerce Commission has authorized this company to operate the line of the San Diego & Gulf, extending from a connection with its line at Byram, Tex., westerly to Palangana, three miles.

WACO, BEAUMONT, TRINITY & SABINE.—*Asks Re-Opening of Missouri Pacific Unification Proceeding.*—This company has petitioned the Interstate Commerce Commission to re-open the proceedings on the application of the Missouri Pacific for authority to acquire more direct control of various subsidiary lines, for the presentation of further evidence to show that the Missouri Pacfic should be required to include the Waco line in its system. The petition shows that after the close of the hearing the commission's consolidation plan was promulgated, allocating it to the Southern Pacific system. The company then asked the Southern Pacific its intentions in the matter and was advised that it declined to consider the acquisition of the Waco. It now desires to introduce evidence to show that the plan therefore cannot be made effective in this way and that it should be allocated to the Missouri Pacific.

The company also filed an application for an amendment of the consolidation plan allocating the line to the Missouri Pacific instead of to the Southern Pacific.

WESTERN PACIFIC.—*Final Valuation.*—The Interstate Commerce Commission has issued a final valuation report as of 1914 placing the final value for rate-making purposes of the property owned and used for common-carrier purposes at $63,861,208. Property used but not owned was placed at $769,193. The tentative valua-

tion report stated that the original cost to date of the existing carrier property, as closely as it is possible to determine that fact from the carrier's records, was $72,616,081, and that the conditionally adjusted investment account of $72,715,091 is the nearest approximation to the actual investment that could be made from the obtainable records. The company contended that the investment and the original cost to valuation date should be stated as not less than $81,481,136, together with 748,370 shares of its capital stock having a par value of $74,837,000, but the report says that for the entire $75,000,000 of stock issued the carrier received only $163,000 in cash and the remainder was given along with $1,518,063 in cash for the undescribed and unappraised property of seven predecessor companies and certain financial and traffic agreements and that the records of the predecessor companies were destroyed in the San Francisco fire of 1906. The final report states the original cost, as nearly as may be ascertained from the records available, at $72,555,963 and says that the book investment in road and equipment, if readjusted in accordance with the accounting classification would be $147,491,974, including the $74,837,000 representing the value of securities at par exchanged for unappraised property the value of which it is unable to report. The cost of reproduction new was placed at $56,792,974 and the cost of reproduction less depreciation at $51,013,794.

WHEELING & LAKE ERIE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $409,000 of its refunding mortgage 5 per cent bonds, series B. Bids for this issue were invited and 12 were received, the highest being 98.689 by Stone & Webster and Blodgett, which bid has been accepted, making the average annual cost to the railroad 5.08 per cent. The issue will mature in 1966.

YAZOO & MISSISSIPPI VALLEY.—*Abandonment.*—This company and the Sunflower & Eastern have applied to the Interstate Commerce Commission for authority to abandon the line from Parchman to Webb., Miss., 11.68 miles.

Dividends Declared

International Railways of Central America.—1¼, quarterly, payable February 15 to holders of record January 31.

Illinois Central.—Common, $1.75, quarterly; Preferred, $3.00, semi-annually, both payable March 1 to holders of record February 7.

Norfolk & Western.—Common, $2.50, quarterly, payable March 19 to holders of record February 28.

Missouri-Kansas-Texas.—Preferred, 1¾, quarterly, payable March 31 to holders of record March 15.

Pennsylvania.—$1.00, quarterly, payable February 28 to holders of record February 1.

Reading Company.—First Preferred, $.50, quarterly, payable March 13 to holders of record February 20.

Wheeling & Lake Erie.—Prior Lien, $5.25, payable February 5 to holders of record January 31. (This equals three quarterly dividends covering the period from November 1, 1921, to August 1, 1922, at rate of $7.00 a year.)

Average Prices of Stocks and of Bonds

	Jan. 28	Last week	Last year
Average price of 20 representative railway stocks.	130.60	128.99	132.07
Average price of 20 representative railway bonds..	92.10	92.78	93.08

Railway Officers

New York Central Appoints Five Vice-Presidents

As announced in the *Railway Age* of January 25, the New York Central lines have recently appointed five new vice-presidents, a new assistant vice-president and a new comptroller. Of the seven appointments, three are in the traffic department, two in the accounting department and one each in the engineering and purchasing and stores departments.

Charles J. Brister, assistant vice-president, with headquarters at Chicago, has been appointed vice-president in charge of freight traffic of the New York Central and the Pittsburgh & Lake Erie, with headquarters at New York. Mr. Brister entered railway service in 1890 with the Dayton, Fort Wayne & Chicago (now part of the Baltimore & Ohio). In February, 1891, he entered the employ of the Union Pacific and the Chicago & North Western in their joint office at Cincinnati, Ohio, where he remained until January, 1892. At that

Charles J. Brister

time he went to the New York Central where he held, consecutively, the positions of stenographer, rate clerk, chief clerk, assistant general freight agent, general freight agent and traffic manager of the Cleveland, Cincinnati, Chicago & St. Louis. On March 1, 1920, he became assistant vice-president of the New York Central Lines at Chicago, which position he has held until his recent appointment.

Loren F. Vosburgh, traffic manager of the New York Central and Ohio Central lines at New York, has been appointed vice-president in charge of passenger traffic of the New York Central and the Pittsburgh & Lake Erie, with the same headquarters. Born on April 7, 1868, at Adrian, Mich., Mr. Vosburgh entered railway service in 1893, with the Lake Shore & Michigan Southern (now the western part of the New York Central main line). From 1893 to 1895 he served as assistant night agent of the L. S. & M. S. at Adrian. In the latter year he became assistant ticket agent at Chicago and in 1897 was made city passenger agent, a position which he held until 1903. From 1903 to 1906 he served as general western passenger agent of the Lake Shore & Michigan Southern, and in 1906 became general

Loren F. Vosburgh

eastern passenger agent of the New York Central lines at New York. From 1910 to 1917 he was assistant general passenger agent and general passenger agent of the New York Central & Hudson River and the West Shore, both of which are now part of the New York Central. In 1917 he became passenger traffic manager of the same roads, assuming at the same time the duties of general passenger agent of the New York Central. He later became passenger traffic manager for the New York Central and in 1920 traffic manager, the position which he has held until his recent appointment. Since August, 1922, Mr. Vosburgh has also acted as traffic manager of the Toledo & Ohio Central, the Kanawha & Michigan, the Kanawha & West Virginia and the Zanesville & Western (all subsidiaries of the New York Central Lines).

Richard E. Dougherty, engineering assistant to the president of the New York Central, has been appointed vice-president in charge of improvements and development, with headquarters as before, at New York. Mr. Dougherty, who was born on February 13, 1880, is a native of New York City. He was educated in the public schools of that city, the City College of New York and Columbia University, from which he was graduated in 1901 with the degree of C. E. He entered railway service on September 30, 1902, as rodman for the New York Central & Hudson River (now part of the New York Central), at Albany, N. Y. From September, 1902, to December 1, 1904, he served with this road as rodman, tran-

sitman, inspector and assistant engineer of the Mohawk division. On the latter date he became assistant engineer in the general offices at New York, a position which he held until September 1, 1905, when he was appointed resident engineer. From December 1, 1907, to

Richard E. Dougherty

January 1, 1910, he served as assistant district engineer and from 1910 to 1921 as district engineer of the New York Central & Hudson River. In 1921 he was appointed designing engineer of the New York Central, and in 1926 he also took up the duties of engineering assistant to the president, which position he held at the time of his recent appointment. Among the many important engineering enterprises which Mr. Dougherty has had under his jurisdiction is the West Side improvement plan, which the New York Central is now carrying out in New York City.

William C. Bower, manager of purchases and stores, has been appointed vice-president in charge of purchases and stores, with headquarters at New York. Born at Clarkson, Mich., Mr.

William C. Bower

Bower entered railroad service with the New York Central in 1903 and two years later became secretary to W. C. Brown, who was at that time vice-president. When Mr. Brown was appointed president in 1909, Mr. Bower continued as his secretary, remaining in that position until 1911, when he was appointed purchasing agent. Nine years later he was appointed general purchasing agent and in 1922 he became assistant manager of purchases and stores. In the following year he was promoted to the position of manager of purchases and stores, in which he remained until the time of his recent appointment to vice-president.

William C. Wishart, comptroller, has been appointed vice-president in charge of accounting, with headquarters as before, at New York. Mr. Wishart was born on August 8, 1871, at Whitesville, N. C. After attending the United States Naval Academy for two years, he entered railroad service in 1891 as a station clerk on the Cape Fear & Yadkin Valley (now divided between the Atlantic Coast Line and the Southern). He subsequently served in various railroad positions, acting at various times as telegraph operator, agent, traveling auditor and statistician. Prior to his connection with the New York Central, he had also been in the service of the Public Service Commission of New

William C. Wishart

York and of the Interstate Commerce Commission. In 1913 he went to the New York Central & Hudson River and the New York Central, and in 1918 was appointed comptroller of those roads, the position which he held at the time of his recent appointment as vice-president.

LeRoy V. Porter, who has served as assistant comptroller of the New York Central at New York since 1918 has been appointed comptroller with the same headquarters, to succeed Mr. Wishart. Mr. Porter was born on September 11, 1876, at Hopkins, Mich. Educated in the high school at Plainwell, Mich., he entered railway service on September 21, 1896, as station agent and telegraph operator of the Indiana, Illinois & Iowa (now part of the New York Central). He served in this capacity until November, 1901, when he was appointed traveling auditor and general bookkeeper of the same road. In May, 1906, he went to the Lake Shore & Michigan Southern as general clerk at Cleveland, Ohio, and in August, 1909, he became chief clerk to the auditor of the same road at the same place. In January, 1910, he was appointed assistant auditor of the L. S. & M. S. at Cleveland, a position which he held until October, 1914, when he became chief clerk to the vice-president of the accounting department of the New York

LeRoy V. Porter

Central. In July, 1918, he was appointed assistant comptroller of the same lines.

William T. Stevenson, traffic manager of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, has been elected assistant vice-president of the New York Central lines, with headquarters at Chicago. Mr. Stevenson was born at Covington, Ky., on September 20, 1873, and after graduating from high school in 1890, entered railway service as a messenger on the Chesapeake & Ohio. Later he served successively as ticket agent's clerk, stenographer, traveling freight agent, and division freight agent on the Cincinnati Northern at Jackson, Mich. In November, 1907, Mr. Stevenson was appointed

William T. Stevenson

chief of the tariff bureau of the Big Four at Cincinnati, and in July, 1914, he was advanced to assistant general freight agent at the same point. He was promoted to general freight agent in June, 1916, then being further promoted to traffic manager in March, 1920. Mr.

Stevenson's election as assistant vice-president became effective on February 1.

Executive

Kirby M. Post, who has been promoted to assistant to the president of the St. Louis Southwestern, with headquarters at St. Louis, Mo., was born at Gatesville, Tex., on April 10, 1886, and entered railway service at the age of 16 years as a telegraph operator on the Cotton Belt. Mr. Post advanced to dispatcher on the Cotton Belt and then became a telegraph operator on the El Paso & Southwestern (now part of the Southern Pacific). Later he served as a dispatcher on the Southern Pacific at

K. M. Post

Tucson, Ariz., where he remained until 1918 when he was appointed chief dispatcher on the Cotton Belt. In 1920 he was promoted to assistant superintendent at Tyler, Tex., then being further promoted to superintendent, with headquarters at the same point, in 1923. Mr. Post's promotion to assistant to the president became effective on December 12.

John A. Hulen, who has been elected vice-president of the Fort Worth & Denver City, the Wichita Valley and the Houston Belt & Terminal, with headquarters at Fort Worth, Tex., has been connected with various railways in Texas for about 20 years. In addition Mr. Hulen was at the time of his election as vice-president of the three companies mentioned above, receiver and president of the Trinity & Brazos Valley and president of the Galveston Terminal, positions he retains. His record of military service covers a period of 40 years and includes participation in four major military campaigns. During the world war he attained the rank of brigadier-general in the United States Army and for the past 10 years he has been a major-general in the Texas National Guard. He was born at Centralia, Mo., on September 9, 1871, attended the public schools at Gainesville, Tex., and Staunton Military Academy and was graduated from Marmaduke Military Academy in 1891. From 1891 to 1903 Mr. Hulen was engaged in the real estate and insurance business at Gainesville, entering railway service in 1907, after serving for four years as adjutant-general of Texas, as city passenger agent for the St. Louis-San Francisco at Houston, Tex. In the

John A. Hulen

following year Mr. Hulen was appointed commercial agent for the Chicago, Rock Island & Pacific at Houston and in 1909 he became general agent for the Rock Island and the Frisco. In May, 1910, he was appointed general freight and passenger agent of the Trinity & Brazos Valley, being elected president and appointed receiver of that road and president of the Galveston Terminal in 1919. Mr. Hulen was also appointed traffic manager of the Fort Worth & Denver City and the Wichita Valley in 1920, his election to vice-president of these lines becoming effective on January 1.

C. W. Brecht, who has been promoted to assistant to the vice-president in charge of operation and maintenance of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio,

C. W. Brecht

has been connected with that road for nearly 23 years. He was born on July 1, 1890, at Bellevue, Ohio, graduated from the high school in that city in June, 1907, and later attended a commercial school. Mr. Brecht entered railway service in June, 1907, as a ticket clerk on the Nickel Plate at Conneaut, Ohio, then occupying successively the positions of stockkeeper, clerk to the signal supervisor, railway accountant and chief clerk to the superintendent of track at Bellevue. Later he was transferred to Cleveland, where he remained until March 1, 1920, when he was advanced to assistant chief clerk to the president and the vice-president at Cleveland. On December 1, 1926, he was promoted to chief clerk to the vice-president at Cleveland, his further promotion to assistant to the vice-president becoming effective on January 1.

Operating

Following the consolidation of the refrigerator service bureau and the claim prevention bureau of the Chicago, Milwaukee, St. Paul & Pacific, on February 1, **W. L. Ennis,** supervisor of refrigeration has been appointed manager of refrigerator service and claim prevention. **N. A. Wicke,** superintendent of the claim prevention bureau, has been appointed assistant manager of refrigerator service and claim prevention. Both will have headquarters, as before, at Chicago.

W. R. Eble, trainmaster on the Hannibal division of the Chicago, Burlington & Quincy at Hannibal, Mo., has been promoted to transportation assistant to the general manager of the Lines East of the Missouri river, with headquarters at Chicago. **A. E. Stoll,** night yardmaster on the La Crosse division at Grand Crossing, Wis., has been promoted to trainmaster on the Hannibal division, succeeding Mr. Eble.

Effective December 30, 1929, the following officers of the Gulf, Mobile & Northern, will occupy similar positions with the New Orleans Great Northern; **G. P. Brock,** assistant general manager, with headquarters at Laurel, Miss., **L. P. O. Exley,** chief engineer, with headquarters at Mobile, Ala., **B. H. Gray,** superintendent motive power, with headquarters at Mobile, Ala.; **C. E. Lanham,** superintendent transportation, with headquarters at Mobile, Ala., **C. H. King,** chief special agent with headquarters at Mobile, Ala., and **J. J. Henry,** general agent, with headquarters at Laurel, Miss.

William Wallace, trainmaster of the Saratoga division of the Delaware & Hudson, has been promoted to superintendent of the Champlain division with headquarters at Plattsburgh, N. Y. Mr. Wallace was born on August 11, 1884, at Brooklyn, N. Y. He entered railroad service with the Delaware & Hudson on March 3, 1904, as a trainman. In September, 1917, he was promoted to conductor, and on March 25, 1919, to general yardmaster at Rouses Point, N. Y. On March 19, 1920, he was appointed assistant trainmaster of the Champlain division, and a year later trainmaster of the same division. On

September 16, 1923, he was transferred to a similar position on the Saratoga division, which position he held at the time of his recent promotion.

Chris McDonough, superintendent of the Cascade division of the Great Northern, with headquarters at Seattle, Wash., has been promoted to general superintendent of the Lake and Eastern districts, with headquarters at St. Paul, Minn. **W. R. Smith,** assistant general manager, with headquarters at Great Falls, Mont., has been appointed general superintendent of the Western district, with headquarters at Spokane, Wash. **R. A. McCandless,** superintendent of the Minot division, with headquarters at Minot, N. D., has been promoted to general superintendent of the Central district, with headquarters at Great Falls, Mont. All of the general superintendencies are newly created positions. **J. B. Smith,** superintendent of transportation, has been promoted to general superintendent of transportation, with headquarters as before at St. Paul, a newly created position. **O. A. Weir** has been appointed superintendent of transportation, with headquarters at St. Paul, succeeding Mr. Smith. **M. J. Welsh** has been appointed superintendent of the St. Cloud division, with headquarters at Minneapolis, Minn. **I. E. Manion** has been appointed superintendent of the Willmar division, with headquarters at Willmar, Minn., replacing **J. A. Frogner,** who has been transferred to the Montana division, with headquarters at Havre, Mont. Mr. Frogner succeeds **A. E. Knights,** who has been transferred to the Cascade division, with headquarters at Seattle, Wash., to replace Mr. McDonough. **M. L. Gaetz** has been appointed superintendent of the Minot division, with headquarters at Minot, succeeding Mr. McCandless.

Walter Wicker, who has been promoted to superintendent of the Joplin division of the Missouri Pacific, with headquarters at Nevada, Mo., has been engaged in railway work for 23 years. He was born at Huntsville, Mo., in 1892 and entered railroad service as a caller on the Kansas City Southern at the age of 14 years. Later he served the Kansas City Southern as a yard clerk and a weighmaster and in 1909 he became a switchtender on the Union Pacific, remaining with that road as a switchman and as a brakeman until 1912, when he entered the employ of the Illinois Central as a switchman. Later he was advanced to yardmaster and to trainmaster and in October, 1926, Mr. Wicker was appointed terminal trainmaster of the Little Rock (Ark.) and North Little Rock terminals of the Missouri Pacific. On September 1, 1928, he was advanced to assistant superintendent of the Arkansas division, with headquarters at Little Rock, then being transferred to the Little Rock terminal on November 20, 1929. Mr. Wicker's promotion to superintendent of the Joplin division became effective on January 11.

Walter Wicker

Traffic

F. H. Madison, traveling freight agent for the New York Central at San Francisco, Cal., has been promoted to assistant general agent of the freight department at the same point.

Frank O. Mooney, contracting freight agent for the Chicago Great Western at Chicago, has been promoted to general agent at St. Louis, Mo., succeeding **George R. Gregg,** who has been transferred to Cincinnati, Ohio.

O. I. Paulson has been appointed assistant supervisor of agriculture of the Union Pacific system, with headquarters at Portland, Ore., succeeding **C. G. Gignoux,** deceased.

G. F. McNeill, assistant general passenger agent of the Northern Pacific, with headquarters at Minneapolis, Minn., retired under the pension rules of the company on February 1, after more than 45 years of continuous service with the Northern Pacific. **C. S. Kirkland,** city ticket agent at Minneapolis, has been promoted to general agent of the passenger department at that point to take over the duties performed by Mr. McNeill.

C. A. Russell, assistant freight traffic manager of the Southern, with headquarters at Memphis, Tenn., has been transferred to a similar position at Birmingham, Ala., succeeding **William T. Turner,** who will serve in the same capacity at Washington, D. C. Mr. Turner succeeds **R. H. Morris** who has been transferred to a similar position at Louisville. **William Humphreys,** assistant general freight agent at New Orleans, La. has been appointed assistant freight traffic manager at Memphis, and **Charles Lauer,** general agent at Havana, Cuba, has been promoted to assistant freight traffic manager, with headquarters at New Orleans, and duties similar to those formerly assigned to Mr. Humphreys.

Bruce F. Moffatt, who has been promoted to freight traffic manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been connected with that railroad for 36 years. He was born at Iola, Kan., on March 28, 1873, and entered railway service in 1893 as a clerk in a local freight office of the Iowa Central (now part of the Minneapolis & St. Louis). Later, he was transferred to the accounting department and then advanced through the positions of clerk, station agent and traveling freight agent. In 1909, Mr. Moffatt became a commercial agent of the M. & St. L. and was then promoted to assistant general freight agent at Minneapolis. He was further promoted to general freight agent, with headquarters at the same point, in March, 1920, and in 1925 became assistant freight traffic manager, with headquarters at Minneapolis, a position he held until his promotion to freight traffic manager on January 1.

J. B. McCorkle, general coal freight agent of the Pennsylvania, with headquarters at Pittsburgh, has been appointed coal traffic manager, with the same headquarters, succeeding **Samuel A. Latimer,** deceased. Mr. McCorkle was born on April 8, 1884, at Winterrowd, Ill. He was graduated from the Nebraska Normal College in 1902, and on April 18, 1904, he entered the service of the Vandalia (now part of the Pennsylvania) as a clerk in the local office at Effingham, Ill. He resigned from this position on April 18, 1905, but re-entered the service of the Vandalia as assistant tariff clerk in the general freight office at St. Louis, Mo., on October 29, 1906. From 1907 to 1924 he served as tariff clerk, percentage division clerk, freight solicitor in the commercial office, chief rate clerk in the general freight office, chief clerk to freight traffic manager, chief of rate bureau, and chief clerk to traffic manager at Pittsburgh, Pa. On April 1, 1924, Mr. McCorkle was appointed division freight agent at Terre Haute, Ind., and in January, 1926, he was transferred to a similar position at Cleveland, Ohio. On November 1, 1927, he was promoted to coal and ore agent with the same headquarters, and in March, 1929, he was appointed general coal freight agent, with headquarters at Pittsburgh, Pa.,

J. B. McCorkle

the position he held at the time of his recent appointment.

E. A. Groves, who has been promoted to general freight agent of the Chicago, Rock Island & Pacific, with headquarters at San Francisco, Cal., with jurisdiction over the traffic agencies at Los Angeles, Cal., Seattle, Wash., and Spokane, Portland, Ore., and Phoenix, Ariz., has been connected with that railroad for 20 years. He was born on January 12, 1883 at Marietta, Ga., and entered railway service in 1902 as a stenographer in the office of the general agent of the Chicago, Burlington & Quincy at Atlanta, Ga. Later he was advanced to traveling freight agent, and in 1908 he accepted a similar position with the Ocean Steamship Company of Savannah.

E. A. Groves

Mr. Groves was appointed traveling freight agent for the Rock Island at Atlanta on January 1, 1910. During the World War he served for two years in the army after a period of training at the officers' training camp at Fort Oglethorpe, Ga. He returned to the Rock Island on March 1, 1920, as general agent at New Orleans, La., then being promoted to assistant general freight agent at Chicago. His further promotion to general freight agent became effective on January 1.

Engineering, Maintenance of Way and Signaling

F. W. Patchell, division engineer of the Cumberland Valley division of the Pennsylvania, has been transferred to the Ft. Wayne division, with headquarters at Ft. Wayne, Ind.

F. X. Fisher, instrumentman on the Chicago, Burlington & Quincy at Aurora, Ill., has been promoted to division engineer, with headquarters at Galesburg, Ill., succeeding **A. E. Smith,** deceased.

Fred Myers, assistant division engineer of the Michigan division of the Cleveland, Cincinnati, Chicago & St. Louis at Wabash, Ind., has been promoted to resident engineer at Cincinnati, Ohio.

F. M. Rutter, superintendent on the Quebec district of the Canadian Pacific, with headquarters at Smith's Falls, Ont., has been appointed assistant district engineer of the British Columbia district, with headquarters at Vancouver, B. C.

F. C. Chandler, roadmaster on the Atlantic Coast Line at Kissimmee, Fla., has been appointed general roadmaster on the Northern district of the First division, with headquarters at Rocky Mount, N. C., succeeding **T. J. Joyner,** who has been granted a leave of absence on account of illness.

F. C. Kronauer, assistant division engineer of the New York division of the Erie, with headquarters at Jersey City, has been promoted to division engineer on the New York terminal division, with the same headquarters, succeeding **P. Sabbot,** who has been transferred to a similar position at Youngstown, Ohio. Mr. Sabbot will succeed **C. K. Scott** who has been appointed trainmaster, with headquarters at Dunmore, Pa.

Mechanical

The positions of fuel supervisor and general air brake inspector on the Oregon-Washington Railroad & Navigation Company has been consolidated and **John Daniels,** fuel supervisor, with headquarters at Portland, Ore., has been appointed to this position.

Peter B. Rogers has been appointed superintendent of shops at the Chicago car works of the Atchison, Topeka & Santa Fe, succeeding **G. D. Woods,** who retired from active service on January 16.

F. F. McCarthy, district superintendent of motive power of the lines of the New York Central west of Buffalo, N. Y., with headquarters at Elkhart, Ind., has been appointed special assistant superintendent of motive power of those lines, with headquarters at Cleveland, Ohio. **J. J. Wenzel,** master mechanic at Elkhart, has been appointed acting district superintendent of motive power, with jurisdiction over the Fourth district, succeeding Mr. McCarthy.

Purchases and Stores

James L. Cowan, who has been promoted to purchasing agent of the Texas and Louisiana lines of the Southern Pacific, with headquarters at New Orleans, La., has been connected with that railroad and the San Antonio & Arkansas Pass, a Southern Pacific subsidiary, for nearly 35 years. He was born at Franklin, La., on October 25, 1875, and entered railway service in 1895 in the accounting department of the S. A. & A. P. In 1900 he became stationery buyer for the same road and in 1903 was appointed chief clerk to the purchasing agent. Three years later he was promoted to purchasing agent, with headquarters at San Antonio, Tex., where he remained until 1925 when the S. A. & A. P. was made a part of the Southern Pacific, and he was appointed

James L. Cowan

assistant purchasing agent of the latter company, with headquarters at Houston, Tex. Mr. Cowan's promotion to purchasing agent became effective on January 1.

Andrew Riley, assistant purchasing agent of the New York, Ontario & Western, with headquarters at New York, has been appointed purchasing agent, with the same headquarters. Mr. Riley was born on April 10, 1868, at Bloomingburg, N. Y. After attending high school, he entered railroad service with the New York, Ontario & Western on May 9, 1882, as an office boy in the roadmaster's office. He served as track

Andrew Riley

storekeeper of the Southern division from May, 1883, to 1886, then becoming ticket agent and transportation storekeeper at Middletown, N. Y. From 1887 to 1889 he held the position of clerk in the chief engineer's office. Between the years of 1889 and 1902 he served as chief clerk in the offices of the purchasing agent and the paymaster. In 1902 he was appointed paymaster, which position he held until 1919 when he was appointed assistant purchasing agent.

Homer A. Empie, superintendent of the Champlain division of the Delaware & Hudson, with headquarters at Plattsburg, N. Y., has been appointed purchasing agent with headquarters at Albany, N. Y. Mr. Empie was born on May 1, 1877, at Breakabeen, N. Y. He entered railroad service with the Delaware & Hudson, after going through high school and college, on November 1, 1899, serving until May 12, 1905, as agent and telegrapher. Between the years of 1905 to 1908 he served as agent at Delanson, Cobleskill, and Oneonta, N. Y. On January 11, 1912, he was appointed division agent of the Saratoga

Homer A. Empie

& Champlain divisions, and in 1914 was transferred to a similar position on the Susquehanna division. On February 1, 1916, he was appointed assistant trainmaster of the same division, and in October of that year was transferred in the same capacity to the Saratoga division. Between the years 1916 and 1917 he held the positions of chief of bureau of car utilization, chief clerk to general manager, and general fuel agent, with headquarters at Albany, N. Y. On October 1, 1928, he was appointed superintendent of the Champlain division, the position he held at the time of his recent promotion.

Obituary

F. W. Pope auditor of freight accounts of the Southern Pacific with headquarters at San Francisco, Cal., died on January 4.

Walter MacDowell, former auditor of receipts for the Norfolk & Western, died in Roanoke, Va., on January 18.

D. W. Gross, assistant to the president of the Atlantic Coast Line, with headquarters at Wilmington, N. C., died from a heart attack on January 23.

John W. O'Brien, superintendent of the Peoria division of the New York, Chicago & St. Louis, with headquarters at Lafayette, Ind., died in that city on January 27 at the age of 58 years.

Maurice A. Welsh, superintendent and traffic manager of the Waterloo, Cedar Falls & Northern, died in Chicago on January 18, following an operation.

H. M. Duncan, superintendent of the Kansas City division of the Atchison, Topeka & Santa Fe, with headquarters at Kansas City, Mo., died in that city on January 14, following an operation.

Joseph P. Wahle, assistant general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., died in that city on January 22, at the age of 63 years.

James T. Robertson, general manager of the Cumberland & Pennsylvania, with headquarters at Cumberland, Md., died suddenly at his home on January 9, from cerebral hemorrhage, shortly after his removal from his office, where he was stricken.

A. H. Payson, for many years assistant to the president of the Atchison, Topeka & Santa Fe, and also vice-president of the Central California Traction Company, died on January 26 at the Mills Memorial Hospital, San Mateo, Cal.

James F. Schaperkotter, former general counsel of the Lehigh Valley, died of heart disease at his home in Merion, Pa., on January 14. He had been a member of the bar for forty-four years, and was associated in the practice of law with George S. Graham and Joseph Gilfillan, after having resigned from his railroad post in 1911.

John C. Peterson, assistant general freight agent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., died at his home in that city on January 15. Mr. Peterson, who was 56 years of age, had been connected with the Soo line for 35 years.

Edward T. Glennon who was assistant vice-president of the Lake Shore & Michigan Southern, and the Chicago, Indiana & Southern, (both now parts of the New York Central) the Cleveland, Cicinnati, Chicago & St. Louis, and the New York Central, with headquarters at Chicago, for various periods between 1912 and 1921, died at his country home at Lake Geneva, Wis., on January 21, at the age of 74 years. Mr. Glennon had also been a member of a law firm which had been local attorney for the New York, Chicago & St. Louis and the Pere Marquette, and general attorney for the Indiana Harbor Belt.

H. F. Reddig, assistant to the general manager of the First district of the Chicago, Rock Island & Pacific, with headquarters at Des Moines, Iowa, died in that city on January 18 following a short illness. Mr. Reddig, who was born in Franklin county, Pa., in 1873, had been connected with the Rock Island since 1907 when he entered the service of the operating department as a transportation inspector. Following a promotion to trainmaster he was further promoted to superintendent at Haileyville, Okla., in 1913, later being transferred to Herington, Kan., and to Trenton, Mo. He was appointed assistant to the general manager of the First district in 1924.

Jesse White Sprong, purchasing agent of the Delaware & Hudson at Albany, N. Y., who died on January 5, was born at Albany, N. Y., on February 29, 1848. He was educated in grammar school and State Normal College (Albany), and entered railway service with the Delaware & Hudson in June, 1874. He subsequently served as private secretary and assistant to the assistant president of that road and in November, 1874, he became chief clerk in the Northern Railroad department of the D. & H. Company. Three years later he was appointed secretary of that department and in October, 1885, he was promoted to the position of comptroller and purchasing agent of the same department. Mr. Sprong was appointed purchasing agent of the Delaware & Hudson in April, 1892, and served in that capacity continuously until the time of his death.

John F. Dinkey, who retired on June 30, 1928, from the office of auditor and treasurer of the Buffalo, Rochester & Pittsburgh, died at his home in Rochester on January 23. Mr. Dinkey was born in South Easton, Pa., on October 16, 1854, and received his education in the public schools and high school of his native city. He entered railroad service on April 1, 1874, with the Lehigh Valley Coal & Navigation Company, since which time he was consecutively to August, 1878, chief clerk in the freight and coal departments of the Lehigh & Susquehanna division of the Central of New Jersey; August, 1878, to February, 1881, chief clerk in the general manager's office of the New York Elevated; February, 1881, to January, 1889, auditor and assistant treasurer of the Rochester & Pittsburgh and its successor, the Buffalo, Rochester & Pittsburgh; and from January, 1890, to the time of his retirement auditor and treasurer of the latter road.

James B. Safford, former superintendent of the Pittsburgh, Chartiers & Youghiogheny, died at his home at Crafton, Pa., on January 15, at the age of 87 years. Mr. Safford had been continuously in railway service for 60 years with the exception of three years of army service during the civil war. He was born at Watertown, N. Y. on July 8, 1842, and after attending the Madison (Ind.) High School entered railway service in 1860 as storekeeper and telegraph operator at the shops of the Jefferson, Madison & Indianapolis (now part of the Pennsylvania). He served that road in various capacities, including that of trainmaster and in 1890 he became superintendent of the Louisville, New Albany & Chicago (now the Chicago, Indianapolis & Louisville). Two years later he was appointed superintendent of the Pittsburgh, Chartiers & Youghiogheny, with headquarters at Pittsburgh, Pa., a position he held until his retirement in 1919.